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Status of Atlantic salmon (*Salmo salar* L.) in Middle Brook (SFA 5), Northeast Brook, Trepassey (SFA 9), and Northeast River, Placentia (SFA 10), Newfoundland, in 2000

État des stocks de saumons atlantique (*Salmo salar* L.) du ruisseau Middle (ZPS 5), du ruisseau Northeast, Trepassey (ZPS 9) et de la rivière Northeast, Placentia (ZPS 10), Terre-Neuve, en l'an 2000

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Abstract

The status of Atlantic salmon stocks in 2000 was determined for Middle Brook in Salmon Fishing Area (SFA 5), Northeast Brook, Trepassey in SFA 9, and Northeast River, Placentia in SFA 10. Total returns of small salmon to Middle Brook in 2000 decreased from 1999 (11%), remained above the 1984-1989 (39%) and 1992-1996 (63%) means, but decreased slightly from the 1992-1999 mean (7%). Total returns of large salmon increased over 1999 and the means (45, 651, 1106, and 33%, respectively). Total returns of small salmon to Northeast Brook, Trepassey in 2000 decreased from 1999 and the 1984-1989 and 1986-1991 means (13, 20, and 14%, respectively) but increased over the 1992-1999 mean (8%). Total returns of large salmon followed a similar pattern but differed in magnitude (-22, -51, -29, and 5%, respectively). Total returns of small salmon to Northeast River, Placentia in 2000 increased over 1999 (57%) but decreased from the means (6, 8, and 33%, respectively); total returns of large salmon increased over 1999 and the means (54, 1138, 1258, and 103%, respectively). Conservation requirements in terms of both eggs and small salmon were achieved in all rivers in 2000. Smolt-to-adult survival for small salmon (repeat spawners included) for Northeast Brook, Trepassey in 2000 (adult year) was 5.8%, a slight improvement over the 5.5% observed in 1999, and low compared with the record high of 9.2% in 1996. Survival in terms of virgin grilse in 2000 was 5.4%. Egg-to-smolt survival for the 1995 spawning year-class was 0.47 (preliminary), an increase over the value of 0.43 for observed 1994. The 1995 year-class value however remained substantially below the high recorded for the 1992 year-class (1.09%) and was more in line with values observed prior to 1992.

Résumé

L'état des stocks de saumon atlantique en 2000 a été déterminé pour le ruisseau Middle, dans la ZPS 5) le ruisseau Northeast, Trepassey, dans la ZPS 9 et la rivière Northeast, Placentia, dans la ZPS 10. Les remontes totales de petits saumons vers le ruisseau Middle en 2000 ont diminué par rapport à 1999 (11 %); elles sont toutefois restées supérieures aux moyennes pour 1984-1989 (39 %) et pour 1992-1996 (63 %) mais ont légèrement diminué par rapport à la moyenne pour 1992-1999 (7 %). Les remontes totales de grands saumons ont augmenté par rapport à 1999 et aux moyennes (45 %, 651 %, 1 106 % et 33 %). Les remontes totales de petits saumons dans le ruisseau Northeast, Trepassey, ont diminué en 2000 par rapport à 1999, ainsi que par rapport aux moyennes pour 1984-1989 et 1986-1991 (13 %, 20 % et 14 %) mais ont augmenté par rapport à la moyenne pour 1992-1999 (8 %). Les remontes totales de grands saumons ont suivi une courbe analogue mais d'ampleur différente (-22 %, -51 %, -29 % et 5 %). Les remontes totales de petits saumons vers la rivière Northeast, Placentia, en l'an 2000 ont augmenté par rapport à 1999 (57 %) mais elles ont diminué par rapport aux moyennes (6 %, 8 % et 33 %); les remontes totales de grands saumons ont augmenté par rapport à 1999 et aux moyennes (54 %, 1 138 %, 1 258 % et 103 %). Les objectifs de conservation en ce qui concerne la ponte et les petits saumons ont été atteints dans tous les cours d'eau en 2000. Le taux de survie des petits saumons jusqu'au stade adulte (y compris les saumons à pontes antérieures) pour le ruisseau Northeast, Trepassey, a été de 5,8 % en 2000 (année d'atteinte du stade adulte), ce qui représente une légère amélioration par rapport au 5,5 % de 1999 mais il demeure faible par rapport au record de 9,2 % atteint en 1996. La survie des madeleineaux a été de 5,4 % en 2000. Le taux de survie jusqu'au stade de smolt des œufs issus des géniteurs de la classe d'âge de 1995 a été de 0,47 % (donnée préliminaire), ce qui représente une augmentation par rapport au taux de 0,43 % observé pour 1994. La valeur pour la classe d'âge de 1995 est toutefois restée nettement en deçà du record enregistré pour la classe d'âge de 1992 (1,09 %), se rapprochant plutôt des valeurs observées avant 1992.

Introduction

In this paper, we examine the status of Atlantic salmon in Middle Brook and Terra Nova River, Bonavista Bay (Salmon Fishing Area (SFA)) 5, Northeast Brook, Trepassey, St. Mary's Bay (SFA 9), and Northeast River, Placentia Bay (SFA 10) in 2000, the ninth year of the commercial salmon fishery moratorium. The location of each river is shown in Figs. 1-3.

Counts of small and large salmon are used in conjunction with recreational fishery data and biological characteristics data to calculate total river returns and egg depositions. Stock status is evaluated relative to conservation egg requirements for all rivers. Also presented in this document is information on egg-to-smolt survival, smolt-to-adult survival, and kelt survival for Northeast Brook, Trepassey and water temperature and water level data for all rivers.

Management Measures, Past and Present

The introduction of the commercial Atlantic salmon fishery moratorium in insular Newfoundland in 1992 followed a major management plan introduced in 1984 (O'Connell *et al.* 1992a; May 1993), which was modified in 1990 and 1991 to include a commercial fishery quota in each SFA (O'Connell *et al.* MS 1992b). Elements of this management regime continued into the moratorium years. The moratorium placed on the Northern Cod Fishery in 1992, which should have eliminated by-catch in cod fishing gear in SFAs 1-9, continued in 2000. There was a small inshore index cod fishery in this area in September-October in 1998, which is mainly outside the migration period of June-early September for most Atlantic salmon destined for insular Newfoundland rivers. In 1999, there was a limited commercial fishery for cod with a total allowable catch (TAC) of 9000 t (Anon. 1999a). In 2000, there was a TAC of 7000 t allocated to an index fishery (CSAS 2001). A moratorium was placed cod fishing in SFAs 10-14A in August 1993. In 1997, the cod fishery in SFAs 10 and 11 opened for the first time since 1993 with a TAC of 10000 t; the quota was increased to 20000 t in 1998 and to 30000 t in 1999, but decreased again to 20000 t in 2000 (CSAS 2000). This fishery opened in April/May and continued through the summer into autumn and winter.

A quota on the number of fish that could be retained in the Atlantic salmon recreational fishery was introduced in each SFA in 1992 and 1993. The quota was assigned for each SFA as a whole as opposed to individual river quotas. Only hook-and-release fishing was permitted after the quota was caught. Recreational fishery quotas were eliminated in 1994. In place of quotas, for insular Newfoundland, the season bag limit for retained small salmon was lowered from eight to six fish, three to be caught prior to July 31 and three after that date. Hook-and-release fishing only was permitted after the bag limit of three was reached in each time period. These measures remained in effect in 1995-1997. Returns of small salmon to many rivers in insular Newfoundland in 1997 were substantially lower than expected (Dempson *et al.* MS 1998; O'Connell *et al.* MS 1998a). As a result of this and uncertainties regarding levels of future returns, the management plan for 1998 was much more conservative than for previous years. The season bag limit for the retention of small salmon in 1998 was reduced to one, pending the results of an in-season review. As a result of the findings of the in-season review, anglers were allowed to additionally retain three small salmon from July 4 until the end of the angling season.

There was a daily hook-and-release limit of two fish. Beginning on July 8, 1998, only the use of barbless hooks was permitted. As in previous years, retention of large salmon was not permitted in insular Newfoundland in 2000.

A three-year management plan was implemented in 1999, a significant component of which was the introduction of a River Classification System for insular Newfoundland, used to develop retention levels based on the health of individual stocks, without jeopardising conservation goals. This was a major departure from previous years when stocks were managed on a global basis. Details of the three-year plan are provided in Anon. (1999b). Under this classification system, Middle Brook and Northeast River, Placentia are designated as Class II systems. Northeast Brook, Trepassey has been closed to angling since 1984 in conjunction with ongoing research activity. Rivers in Class II fit the following criteria: are smaller to medium size rivers where conservation requirements have been met on average since 1992 (the first year of the commercial salmon fishing moratorium); are rivers that support medium size populations of Atlantic salmon; main stems are subject to fluctuations in environmental conditions such as low water levels and high water temperatures and hence protocols regulating angling closures for environmental reasons apply; are in remote locations with low angling effort; have stable and high catch rates based on historical data. The retention limit for small salmon for Class II rivers is four fish, without the July 31 season split, and the daily hook-and-release limit is four fish.

Methods

Recreational fishery data and counts of adult salmon in 2000 were compared to two pre-salmon moratorium means (1984-1989 and 1986-1991). The 1984-1989 mean corresponds to years under the major management changes in the commercial fishery in the Newfoundland Region, cited above. The 1986-1991 mean incorporates the quota years of 1990 and 1991. The mix of management measures in effect during 1984-1989 on the one hand and the imposition of commercial quotas in 1990 and 1991 on the other, should be kept in mind when making evaluations based on the 1986-1991 mean. Recreational fishery data in 2000 were also compared to the moratorium means for 1992-1996 and 1997-1999 (see discussion of the License Stub Return System below) while counts of adult salmon were compared to the mean for 1992-1999.

Adult salmon and smolt counting equipment

Adult salmon were counted in traps installed in the fishways located in Middle Brook and Northeast River, Placentia. Smolt and adult counts were obtained in Northeast Brook, Trepassey with a counting fence and a convertible steel smolt-adult trap (Whelan *et al.* 1989).

Kelt survival, Northeast Brook, Trepassey

Kelt survival was assessed for the first time in 2000. This was accomplished by tagging out-migrating kelts captured at the counting fence with Floy spaghetti tags and recapturing them during the upstream migration.

Recreational fishery data

Prior to 1997, catch and effort data for each river were collected by Department of Fisheries and Oceans (DFO) River Guardians and processed by DFO Science Branch staff, according to procedures outlined in Ash and O'Connell (1987). Rivers with counting facilities had information separated above and below the counting facilities. Angling data for Middle Brook in 1997 (collected above and below the fishway) were obtained through a creel survey (O'Connell *et al.* MS 1998b). Data for 1997-2000 for all rivers (except Middle Brook in 1997) were derived from the License Stub Return System (see O'Connell *et al.* MS 1998b for a description of the methodology). Data for 2000 are preliminary at this stage. It was not possible to apportion information above and below counting facilities with the License Stub Return. This was accomplished in 2000 by applying the proportion for above and below for the period 1993-1996 to the License Stub Return estimate for the entire river.

The License Stub Return System for collecting recreational fishery data represents a complete departure from the previous DFO River Guardian method. Details of a comparison of stub data, with DFO River Guardian data for insular Newfoundland rivers for 1994-1996, are provided in O'Connell *et al.* (MS 1998b). Overall, estimates of released small and large salmon from the stub were substantially higher than estimates from River Guardians while the two methods were closer with respect to estimates of small salmon retained. This has to be kept in mind when comparing catches in 1997-2000 with previous years. There is evidence that effort expenditure was under-reported by the stub method and hence this information will not be used in the present document. Analyses are currently being carried out to adjust for under-reporting. Effort data were available for Middle Brook from the creel survey in 1997.

Biological characteristics

Biological characteristics information (obtained by sampling recreational catches) used to calculate egg depositions for small salmon (< 63 cm in length) is shown in Tables 1-3. Since there was no recreational fishery in Northeast Brook, Trepassey, there was no information available on bright (upstream migrating) adult salmon, in year (i). Bright adults were not sampled at the trap because of the small run size involved and the risk of mortality, which might have compromised ongoing research on egg-to-smolt survival. Therefore, kelts were sampled in year (i + 1), and mean fork length (cm) was used in the calculation of egg deposition in year (i) instead of mean weight (kg); the value for the current year was the mean for 1993-2000. These kelts were also sexed using external characteristics. In instances where sample sizes were small (N < 20), the means of the various parameters for either the moratorium period (1992-2000 for Middle Brook and Northeast River, Placentia) or the pre-moratorium period (1984-1991) were used.

A mean weight of 3.13 kg and a proportion of female value of 0.77 (O'Connell *et al.* MS 1997a) was used for fish ≥ 63 cm in length (large salmon) for all years and for all rivers except Northeast Brook, Trepassey. Mean length and proportion of female from a blended sample of small and large kelts were used for this system.

Fecundity was determined from ovaries collected in the recreational fishery. Ovaries were stored in Gilson's fluid until ovarian tissue had broken down, after which time eggs were transferred to 10% formalin. Eggs, which for the most part were in early stages of development, were counted directly. Relative fecundity values used for Middle Brook and Northeast River, Placentia are shown in Table 4. In years when the sample size was small ($N < 20$), the mean fecundity for all years combined for each river was used. The relative fecundity value (65.6 eggs/cm) used for Northeast Brook, Trepassey was that for all years combined for nearby Biscay Bay River (O'Connell *et al.* (MS 1997b). The same relative fecundity was used for both small and large salmon.

Biological characteristics of smolts for Northeast Brook, Trepassey were obtained by sampling throughout the run during counting operations each year.

Condition was examined using Fulton's condition factor (K) as follows:

$$K = W \times C / L^3 \qquad (1)$$

where,

W = weight (gm for smolts; kg for virgin grilse)
C = 100 (for smolts); 100000 (for virgin grilse)
F = fork length (cm)

Total river returns

Total river returns (TRR) were calculated as follows:

$$TRR = RC_b + C + HRM_b \qquad (2)$$

where,

RC_b = retained recreational catch below counting facility
C = count of fish at counting facility
HRM_b = hook-and-release mortalities (10% of hook-and-release fish) below counting facility

Spawning Escapement

Spawning escapement (SE) was calculated according to the formula:

$$SE = TRR - RC_a - BR - HRM_t \qquad (3)$$

where,

RC_a = retained recreational catch above counting facility
BR = broodstock removal (Northeast River, Placentia, 1997-2000)
HRM_t = hook-and-release mortalities (10% of hook-and-release fish) above counting facility

A number of mortalities of small salmon occurred in Northeast River, Placentia (49) and Middle Brook (16) subsequent to being counted in 1996 which were deducted from TRR in equation 3. These mortalities resulted from unusually high flood conditions in Northeast River,

Placentia and from modifications to the trap configuration in Middle Brook.

Egg Deposition

Egg deposition (ED) was calculated as follows:

$$ED = SE \times PF \times RF \times MW \quad (4)$$

where,

SE = number of spawners
PF = proportion of females
RF = relative fecundity (no. of eggs/kg)
MW = mean weight of females

For Northeast Brook, Trepassey, RF was in terms of number of eggs per cm and mean length of females was used instead of mean weight (MW), as pointed out above.

Egg deposition calculations were performed for small and large salmon separately, except in the case of Northeast Brook, Trepassey, where small and large salmon were combined. Total egg deposition was obtained by summing depositions for small and large salmon for rivers other than Northeast Brook, Trepassey.

The phenomenon of atresia occurs in Atlantic salmon in insular Newfoundland (O'Connell and Dempson MS 1997). Since egg deposition calculations were based on eggs in early stages of development, they should be regarded as potential egg depositions.

Conservation egg deposition and spawner requirements

The conservation egg deposition and spawner requirements for each river were developed by O'Connell and Dempson (MS 1991a,b) (Table 5). Requirements for Northeast Brook, Trepassey were modified from those presented in O'Connell and Dempson (MS 1991b) based on a more recent survey of available parr rearing habitat. The egg requirement for fluvial parr rearing habitat (Elson 1957) for all rivers was 240 eggs/100 m^2 (Elson 1975); the requirement for lacustrine habitat was 368 eggs/ha (O'Connell and Dempson 1995). The adult conservation requirement for each river was calculated in terms of small salmon only. Egg deposition from large salmon was considered as a buffer.

Net marks

In 1997-2000, adult salmon entering the fishway in Middle Brook were examined for the incidence of net marks; this information was also collected for the first time for Northeast River, Placentia in 2000.

Environmental data

Water temperatures were measured at each counting facility with a Ryan TempMentor digital thermograph (in 1984-1990) and a Hugrun Seamon digital thermograph (in 1991-2000).

Water levels were measured near each counting facility each year over a permanent benchmark installed in the river.

Results

Recreational fishery

Catch and effort data for Middle Brook and Northeast River, Placentia are presented in Appendices 1-2. Catches for all years prior to 1992 represent retained catch for the entire angling season. Total catch for 2000 (retained plus released fish) is compared to years prior to 1992 and the 1992-1996 and 1997-1999 means. There was no estimate of released fish during the period of retention of catch in 1992, which could impact on comparisons. The total number of fish retained in 2000 is also shown. Calculation of CPUE in terms of retained fish only was not possible since effort figures apply to both retained and released fish collectively. For reasons pointed out above, effort and CPUE information were not available for 1997-2000 (except for Middle Brook in 1997).

The total catch of small salmon in 2000 for Middle Brook decreased from 1999 (46%) and the 1992-1997 (73%) and 1998-1999 (55%) means as did the number of small salmon retained (46, 72, and 47%, respectively). The number of large salmon released decreased by 56% from 1999, 57% from the mean for 1998-1999, and was 11% higher than the mean for 1992-1997.

The total catch of small salmon in Northeast River, Placentia in 2000 decreased from 1999 (16%) and the 1992-96 (55%) and 1997-1999 (56%) means as did the number of small salmon retained (10, 50, and 51%). The number of large salmon released was similar to 1999 but decreased from the 1997-1999 mean (67%).

Biological characteristics of adults

The percentage of repeat spawning grilse in the small salmon component for Middle Brook was lower during the moratorium years than during pre-moratorium years (Table 1). There was a slight increase in the incidence of repeat spawners during the moratorium years over pre-moratorium years for Northeast Brook, Trepassey (Table 2) but Northeast River, Placentia showed a marked increase (Table 3). Mean fork length and mean weight were higher for the moratorium period than for the pre-moratorium period for all rivers. Percent female during the moratorium years increased over pre-moratorium years for Northeast Brook, Trepassey but remained the same for Middle Brook and Northeast River, Placentia.

Mean fork length, mean weight, mean smolt age, and mean condition factor for virgin grilse during the moratorium period for Middle Brook and Northeast River, Placentia are presented in Figs. 4-5. Mean fork length and mean smolt age for Middle Brook in 2000 were not unusual in the context of the entire time series; mean weight and mean condition were the highest since 1996. Mean fork length and mean weight for Northeast River, Placentia in 2000 were the highest of the time series while mean smolt age and mean condition were similar to that of the

past few years. It should be noted that sample sizes for these rivers in recent years have been comparatively small.

Modal smolt age as determined from virgin grilse for Middle Brook was 3+ years during 1992-1994 but in 1995-2000 it increased to 4+ years (Fig. 6). Except for 1993 when the percent composition for the 3+ and 4+ age groups was the same, modal smolt age for Northeast River, Placentia was consistently 3+ years (Fig. 7)

Counts of adults

Counts of small and large salmon for the Middle Brook fishway are shown in Table 6. The count of small salmon in 2000 decreased by 8% from 1999, but remained above the 1984-1989 and 1986-1991 means (81 and 120%) and was similar (2%) to the mean for 1992-1999. The count of large salmon increased over 1999 (45%) and the 1984-1989 (651%), 1986-1991 (1106%), and 1992-1999 (33%) means, respectively. Daily counts of small and large salmon peaked around the second week of July in 2000 (Fig. 8). The median date of return of small and large salmon in 2000 occurred around mid July, with the median for large being only a few days later than that of small (Fig. 9).

The count of small salmon for Northeast Brook, Trepassey in 2000 (Table 6) decreased from 1999 (13%) and the 1984-1989 (20%) and 1986-1991 (14%) means and increased slightly over the 1992-1999 mean (8%); the count of large salmon showed a similar pattern (-22, -51, -29, and 5%, respectively. Daily counts of small and large salmon and dates of median counts are shown in Figs. 10 and 11. The peak and median counts of small and large salmon in 2000 occurred in early August with the medians for both small and large coinciding.

The count of small salmon for Northeast River, Placentia in 2000 (Table 6) increased over that of 1999 (10%), was similar to the means for 1984-1989 (1%) and 1986-1991 (-3%), but decreased from the 1992-1999 mean (31%); the count of large salmon increased over 1999 and all means (54, 1138, 1258, and 103%, respectively), the second highest on record. The peak daily count of small salmon occurred around mid-July in 2000 while that of large salmon was in early July (Fig. 12). Similar to 1999, there were no markedly distinct peaks for either size component in 2000. The median count for small salmon occurred in the second week of July, a few days later than that of large salmon (Fig. 13).

Total river returns, spawning escapement, and percentage of conservation requirement achieved

Total river returns, spawning escapement, potential egg deposition, and percentage of conservation requirement achieved for Middle Brook are shown in Table 7. Total river returns and percentages of conservation egg requirements achieved are also shown in Figs. 14 and 15.

Total returns of small salmon to Middle Brook in 2000 decreased from 1999 (11%), remained above the 1984-1989 (39%) and 1992-1996 (63%) means, but decreased slightly from the 1992-1999 mean (7%). Total returns of large salmon increased over 1999 and the means (45, 651, 1106, and 33%, respectively). Conservation requirements in terms of both eggs and small

salmon were achieved in all moratorium years in Middle Brook (the highest percentage achieved occurred in 1998) but in only one year (1984) prior to the moratorium.

Total river returns, spawning escapement, potential egg deposition, and percentage of conservation egg requirement achieved for Northeast Brook, Trepassey and Northeast River, Placentia are shown in Table 8. Total river returns and percentage of conservation egg requirement achieved are also shown in Figs. 14 and 15. Total returns of small and large salmon to Northeast Brook, Trepassey are equivalent to counts at the counting fence (no angling in this system), which have been dealt with previously. Total returns of small salmon to Northeast River, Placentia in 2000 increased over 1999 (57%) but decreased from the means (6, 8, and 33%, respectively); total returns of large salmon increased over 1999 and the means (54, 1138, 1258, and 103%, respectively). Conservation requirements in terms of both eggs and small salmon were achieved in 2000 and in all other years (or nearly so in terms of small salmon) of the time series in Northeast Brook, Trepassey. Conservation requirements in terms of both eggs and small salmon were achieved in all years of the time series in Northeast River, Placentia.

Smolt counts and biology, Northeast Brook, Trepassey

The number of smolts counted in Northeast Brook, Trepassey in 2000 increased by 23% over 1999 (Table 9). Median run timing (day of the year) for 2000 was earlier than in 1999 and was one of the earlier of the time series (Fig. 16).

Information on fork length (cm), whole weight (gm), age (yr), and condition for smolts for the years 1985-2000 is shown in Fig. 17. Values for all of these parameters in 2000, except mean smolt age, increased over 1999 and were the highest in recent years; mean condition was the highest of the time series. Mean smolt age decreased from 1999 to a level similar to the more usual. Modal smolt age was 4+ years for all years except 1985, 1990, and 1996, when it was 3+ years (Fig. 18). Some 2+ smolts were encountered in 2000, only the third time this occurred for the time series (other years were 1989 and 1995).

Kelt survival, Northeast Brook, Trepassey

Out of 71 out-migrating kelts tagged in Northeast Brook, Trepassey, 5 were subsequently recaptured in the adult returns, for a return rate of 7.04%. The number of days spent at sea ranged from 73 (out on April 30; in on July 12) to 100 (out on April 30; in on August 8).

Smolt-to-adult survival, Northeast Brook, Trepassey

Smolt-to-adult survival for small salmon (including repeat spawners) for Northeast Brook, Trepassey in 2000 (adult year) increased slightly (5%) over that observed in 1999 (Table 9 and Fig. 19). The value for 1997 was the second lowest on record, only slightly better than the low observed in 1992 and well below the record high of 9.2% in 1996. Survivals during the moratorium years were either comparable to or only slightly higher than those observed prior to the moratorium. In terms of virgin grilse, survival in 2000 increased by 6% over that of 1999 (Fig. 19). It should be noted that the proportion of repeat spawners value used in the determination of survival in terms of virgin grilse for 2000, was the mean for the moratorium

years.

Egg-to-smolt survival, Northeast Brook, Trepassey

Over the period 1986-1992, egg deposition in Northeast Brook, Trepassey showed an overall decline (Table 10 and Fig. 20). Egg-to-smolt survivals corresponding to these egg depositions were more or less stable between 1984 and 1991 but the 1992 year-class showed a marked increase. Survival for the 1993 and 1994 year-classes however decreased from 1992 with only a slight increase noted for 1995 over 1994. There was a significant negative relationship between egg-to-smolt survival and egg deposition (expressed as number eggs/100 m^2 of fluvial habitat) (Fig. 21). Best survival and smolt production was observed for the 1992 year-class, the year of the lowest egg deposition (Figs. 20 and 21).

Net marks

The incidence of net marks has been recorded for Middle Brook since 1997 and for Northeast River, Placentia beginning in 2000 (Table 11). The number of small salmon with net marks in Middle Brook in 2000 was the lowest recorded while the reverse was true for large salmon. For small and large salmon combined, there was an increase over 1999 but the incidence remained lower than levels recorded in 1997 and 1998. The percentages of net-marked small and large salmon in Northeast River, Placentia in 2000 were similar.

Environmental conditions

Maximum and minimum daily water temperatures (°C), measured at the counting facility in each river, are shown in Appendices 3-5 and Figs. 22-24. Mean daily water levels measured near each counting facility are presented in Appendices 6-8 and Figs. 25-27. For Middle Brook in 2000, maximum water temperatures reached or exceeded 25 (°C) on several occasions from around mid-July to mid-August; maximum temperatures exceeded 20 (°C) for much of the period from around mid-June through to the end of August. Except for several days in August, minimum temperatures were below 20 (°C). Maximum temperatures in Northeast Brook, Trepassey at or in excess of 20 (°C) in 2000 occurred sporadically from around late June through August. Minimum temperatures were consistently below 20 (°C). In Northeast River, Placentia, maximum temperatures reached or exceeded 25 (°C) on several occasions during mid-June through August and 20 (°C) for most of the June-August period in 2000. Except for a few days in mid-August, minimum temperatures were consistently below 20 (°C).

Lowest water levels in Middle Brook in 2000 occurred in August, following a slow, gradual decrease throughout the summer. Water levels in Northeast Brook, Trepassey in 2000, displayed several peaks. Water levels in Northeast River, Placentia in 2000 fluctuated throughout the summer and reached a maximum on August 18.

Discussion

Sea-survival for small salmon returning to Northeast Brook, Trepassey in 2000 improved only slightly (5%) over that of 1999. It should be noted that sea-survival values overall during the moratorium years were similar to values observed prior to the moratorium. For Conne River (SFA 11) however, also located in southern Newfoundland, survival increased (by 118%) from 3.4% in 1999 to 7.4% in 2000, the highest of the moratorium years (O'Connell *et al.* MS 2001). Average total returns of small and large salmon during the moratorium years were lower than in pre-moratorium years. Total returns of small salmon to Northeast River, Placer 'a in 2000 were the second lowest of the moratorium years (lowest occurred in 1999), and in fact were lower than the pre-moratorium means.

The occurrence of net marks in Middle Brook and Northeast River, Placentia was likely the result of encounters with illegal and legal fishing gear in coastal waters and illegal gear in freshwater below the counting facilities. It is not possible to accurately estimate the extent of such removals. Therefore total returns considered in the context of being equivalent to total production during the moratorium have to be regarded as minimum values.

There is an indication that lower egg depositions result in better egg-to-smolt survivals in Northeast Brook, Trepassey (Fig. 21). Similar, but much tighter and more highly significant relationships have been reported for Conne River in SFA 11 (Dempson *et al.* MS 2001) and Western Arm Brook in SFA 14B (Mullins *et al.* MS 2001).

Cautions associated with the parameter values used to calculate conservation egg requirements have been discussed previously by O'Connell and Dempson (1995) and will not be dealt with here.

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Table 1. Biological characteristics data for female small salmon and with sexes combined plus unsexed fish by year and for pre-moratorium (1984-1991) and moratorium (1992-2000) periods for Middle Brook, Bonavista Bay (SFA 5), Newfoundland. WW = whole weight (kg); FL = fork length (cm); RS repeat spawning grilse.

	Sexes combined plus unsexed							Females						%	
Year	$\bar{X}$ WW	SD	N	$\bar{X}$ FL	SD	N	% RS year of return	$\bar{X}$ WW	SD	N	$\bar{X}$ FL	SD	N	Female	N
1984	1.48	0.39	155	49.9	4.31	155	7.7	1.48	0.40	121	49.8	4.43	121	79	121
1985	1.48	0.35	115	49.5	4.46	115	4.4	1.51	0.34	89	50.2	4.20	89	82	89
1986	1.63	0.47	54	52.2	4.56	55	18.2	1.58	0.47	41	52.0	4.75	42	86	42
1987	1.33	0.34	19	49.9	3.14	19	15.8	1.30	0.33	7	49.5	3.36	7	41	7
1988	1.32	0.41	46	49.3	3.47	47	0.0	1.37	0.51	22	49.7	3.82	22	71	22
1989	1.48	0.30	9	51.5	4.37	15	26.7	1.80		1	53.3	0.35	2	100	2
1990	1.67	0.24	16	52.3	2.39	16	25.0	1.69	0.27	11	52.7	2.67	11	85	11
1991	1.50	0.45	11	53.4	4.82	11	9.1	1.40	0.50	4	51.5	5.34	4	50	4
1992	1.64	0.43	78	53.6	3.96	93	8.2	1.74	0.40	37	54.1	3.27	48	83	48
1993	1.72	0.44	120	53.7	4.38	137	0.8	1.65	0.42	71	53.2	4.40	79	76	79
1994	1.78	0.40	72	53.2	3.61	73	1.6	1.75	0.33	33	53.0	3.42	34	74	34
1995	1.55	0.45	83	51.3	4.11	83	2.5	1.47	0.34	33	51.5	4.31	33	62	33
1996	1.96	0.42	73	54.2	3.74	73	15.7	1.95	0.38	41	54.2	3.58	41	82	41
1997	1.73	0.42	51	54.1	4.67	51	3.9	1.72	0.43	40	53.8	4.67	40	81	42
1998	1.78	0.56	19	54.2	4.92	19	15.8	1.63	0.51	15	53.3	4.76	15	88	15
1999	1.79	0.56	18	54.3	4.56	18	16.7	2.00	0.61	6	55.3	5.65	6	86	6
2000	1.92	0.39	24	54.3	4.42	23	21.7	1.78	0.35	11	52.8	2.82	11	65	11
Pre-moratorium															
1984-1991	1.48	0.40	425	50.2	4.34	433	9.1	1.50	0.40	296	50.4	4.34	298	78	298
Moratorium															
1992-2000	1.74	0.45	538	53.4	4.23	570	6.5	1.71	0.42	287	53.4	4.09	307	76	309

Table 2. Biological characteristics data for female salmon kelts (small and large combined) and with sexes combined plus unsexed fish by year and for pre-moratorium (1985-1991) and moratorium (1992-2000) periods for Northeast Brook, Trepassey (SFA 9), Newfoundland. FL = fork length (cm); RS = repeat spawning grilse.

Year	Sexes combined plus unsexed				Females			%	
	$\bar{X}$ FL	SD	N	% RS year of return	$\bar{X}$ FL	SD	N	Female	N
1985	55.0	4.88	16	6.7	57.6	5.94	4	25	4
1986	53.7	4.35	86	7.2	52.6	3.59	68	79	68
1987	54.3	3.63	104	13.7	53.7	3.57	83	80	83
1988	53.1	4.70	23	0.0	53.4	1.95	13	57	13
1989	52.4	4.05	63	8.6	52.3	4.16	48	77	49
1990	52.4	5.66	21	0.0	52.3	5.94	19	90	19
1991	55.6	3.69	55	5.9	54.9	3.64	43	78	43
1992	55.6	3.85	41	7.7	55.3	3.98	36	88	36
1993	57.6	2.79	33	14.8	57.4	2.83	27	82	27
1994	56.0	3.80	42	5.7	55.3	3.72	31	79	31
1995	54.5	3.97	44	9.3	54.8	3.41	37	84	37
1996	56.4	4.82	65	7.5	55.8	4.52	54	83	54
1997	56.7	6.39	39	17.6	56.8	6.80	34	88	35
1998	56.2	4.62	54	8.3	56.4	4.72	48	89	48
1999	57.0	5.57	35	3.1	56.9	5.64	34	97	34
2000	57.0	4.60	80	6.9	56.9	4.73	72	90	72
*Pre-moratorium 1984-1991	54.1	4.24	409	8.2	53.6	4.02	314	77	315
*Moratorium 1992-2000	56.4	4.71	392	8.7	56.3	4.74	337	87	338

*These time periods reflect the year of adult return, e.g., kelts sampled in 2000 returned as bright adults in 1999.

Table 3. Biological characteristics data for female small salmon and with sexes combined plus unsexed fish by year and for pre-moratorium (1984-1991) and moratorium (1992-2000) periods for Northeast River, Placentia Bay (SFA 10), Newfoundland. WW = whole weight (kg); FL = fork length (cm); RS = repeat spawning grilse.

Year	Sexes combined plus unsexed							Females						% Female	N
	$\bar{X}$ WW	SD	N	$\bar{X}$ FL	SD	N	% RS year of return	$\bar{X}$ WW	SD	N	$\bar{X}$ FL	SD	N		
1984	1.50	0.18	25	52.1	2.40	27	3.7	1.51	0.19	22	52.2	2.32	24	89	24
1985	1.55	0.24	51	51.6	3.26	51	7.8	1.56	0.24	47	51.8	3.25	47	92	47
1986	1.67	0.25	68	53.1	2.39	69	2.9	1.69	0.25	63	53.3	2.36	63	93	63
1987	1.40		1	52.6	5.09	2	0.0	1.40		1	49.0		1	100	1
1988	1.61	0.27	44	52.6	3.38	43	6.8	1.63	0.27	33	52.8	3.56	33	94	33
1989	1.71	0.22	24	53.7	2.85	25	8.0	1.72	0.24	19	53.9	2.64	19	95	19
1990	1.60	0.31	49	54.6	2.32	49	4.1	1.56	0.29	40	54.4	2.33	40	87	40
1991	1.00		1	47.5		1	0.0	1.00		1	47.5		1	100	1
1992			0	53.5	2.95	10	0.0			0	53.6	3.13	9	100	9
1993	1.83	0.31	23	54.2	3.08	24	4.8	1.76	0.33	10	52.9	1.97	10	83	10
1994	1.62	0.44	30	55.2	3.14	30	40.9	1.73	0.24	5	55.0	2.69	5	100	5
1995	1.77	0.47	48	55.4	3.76	48	31.1	1.72	0.37	25	54.7	3.21	25	100	25
1996	1.83	0.44	71	55.5	3.71	70	30.0	1.81	0.42	45	55.3	3.45	44	98	45
1997	1.87	0.30	44	54.3	2.81	44	4.9	1.88	0.27	31	54.2	2.48	31	94	31
1998	1.72	0.37	33	54.3	3.06	35	11.4	1.68	0.33	24	53.7	2.28	26	76	26
1999	1.92	0.42	24	55.8	3.55	25	24.0	1.89	0.30	17	55.4	2.57	17	89	17
2000	1.98	0.39	16	56.8	2.63	16	13.3	2.04	0.34	15	57.1	2.38	15	94	15
Pre-moratorium															
1984-1991	1.61	0.26	263	52.9	2.96	267	5.2	1.61	0.26	226	53.0	2.91	228	92	228
Moratorium															
1992-2000	1.81	0.41	289	55.1	3.37	302	20.1	1.81	0.36	172	54.7	2.97	182	92	183

Table 4. Relative fecundity values used to calculate egg depositions for each river in SFAs 5 and 10.

River	Year	Relative fecundity (No. eggs/Kg)	N
SFA 5			
Middle Brook	1984	1896	102
	1985	1993	84
	1986	1955	36
	1987	2160	5
	1988	2259	10
	1990	1896	10
	1993	2150	31
	Years combined	1980	278
SFA 10			
Northeast River, Placentia	1984	2332	21
	1985	2205	39
	1986	2282	45
	1988	2472	34
	1990	2500	41
	1993	2144	5
	Years combined	2352	186

Table 5. Atlantic salmon conservation requirement for each river in terms of eggs and small salmon.

River	Conservation requirement	
	Eggs (Millions)	Small salmon (No.)
SFA 5		
Middle Brook	2.342	1012
SFA 9		
Northeast Brook, Trepasssey	0.144	51
SFA 10		
Northeast River, Placentia	0.719	224

Table 6. Counts of Atlantic salmon at Middle Brook fishway 1974-2000, Bonavista Bay (SFA 5), Northeast Brook, Trepassey counting fence, St. Mary's Bay (SFA 9), 1984-2000, and Northeast River fishway, Placentia Bay (SFA 10), 1974-2000. Partial counts are in parentheses and are not included in means.

	Middle Brook SFA 5		Northeast Brook, Trepassey SFA 9		Northeast River, Placentia SFA 10	
Year	Small salmon	Large salmon	Small salmon	Large salmon	Small salmon	Large salmon
1974	(770)	(77)			223	9
1975	(1119)	(9)			(186)	(36)
1976					294	56
1977						
1978	1403	16			390	32
1979	(1350)	(54)			454	37
1980	1712	91			433	34
1981	2414	39			334	62
1982	1281	20			86	36
1983	1195	75			233	22
1984	1379	57	89	33	419	44
1985	904	27	124	41	384	0
1986	1036	15	158	30	725	39
1987	914	19	91	30	325	16
1988	772	14	97	19	543	11
1989	496	19	62	18	706	15
1990	745	13	71	9	551	25
1991	562	14	99	13	353	8
1992	1182	43	49	10	921	46
1993	1959	87	79	17	847	65
1994	1513	90	99	15	677	70
1995	1139	168	80	12	663	74
1996	1751	161	73	15	1225	123
1997	1221	262	50	9	641	185
1998	2405	196	91	11	756	287
1999	1802	130	95	18	336	167
2000	1660	189	83	14	520	258
$\bar{X}$ 84-89	917	25	104	29	517	21
95% LCL	610	8	69	19	339	3
95% UCL	1223	42	138	38	695	39
N	6	6	6	6	6	6
$\bar{X}$ 86-91	754	16	96	20	534	19
95% LCL	540	13	61	11	356	7
95% UCL	969	18	132	29	711	31
N	6	6	6	6	6	6
$\bar{X}$ 92-99	1622	142	77	13	758	127
95% LCL	1251	84	61	11	544	59
95% UCL	1992	200	93	16	973	196
N	8	8	8	8	8	8

Table 7. Total river returns, spawning escapement, and percentage of conservation requirement achieved in terms of small salmon and eggs for Middle Brook, Bonavista Bay (SFA 5), 1984-2000.

	Total returns		Prop.	Spawning escapement		Egg deposition (Millions)		% cons. req. achieved		Eggs per
Year	Small	Large	Large	Small	Large	Small	Large	Small	Eggs	100 sq. m
				Middle Brook						
1984	1675	57	0.033	1265	57	2.804	0.260	125	131	1161
1985	1283	27	0.021	745	27	1.838	0.130	74	84	745
1986	1547	15	0.010	758	15	2.014	0.071	75	89	789
1987	1053	19	0.018	866	19	2.006	0.091	86	90	794
1988	1337	14	0.010	629	14	1.211	0.067	62	55	484
1989	626	19	0.029	461	19	1.068	0.091	46	49	439
1990	1070	13	0.012	721	13	1.670	0.062	71	74	656
1991	763	14	0.018	485	14	1.124	0.067	48	51	451
1992	1563	43	0.027	1140	43	3.260	0.205	113	148	1312
1993	2247	88	0.038	1909	84	5.148	0.436	189	238	2115
1994	1844	90	0.047	1423	90	3.648	0.429	141	174	1544
1995	1448	168	0.104	1037	168	1.872	0.801	102	114	1012
1996	2112	161	0.071	1605	161	5.081	0.767	159	250	2215
1997	1287	262	0.169	1209	262	3.335	1.249	119	196	1736
1998	2549	196	0.072	2345	195	6.114	0.927	232	301	2667
1999	1950	130	0.063	1762	129	4.593	0.614	174	222	1972
2000*	1738	189	0.098	1637	189	4.212	0.898	162	218	1936

*Preliminary

Table 8. Total river returns, spawning escapement, and percentage of conservation requirement achieved in terms of small salmon and eggs for Northeast Brook Trepassey, St. Mary's Bay (SFA 9), and Northeast River, Placentia Bay (SFA 10), 1984-2000.

	Total returns		Prop.	Spawning escapement		Egg deposition (Millions)		% cons. req. achieved		Eggs per
Year	Small	Large	Large	Small	Large	Sm.+ Lg.		Small	Eggs	100 sq. m
				Northeast Brook, Trepassey						
1984	89	33	0.270	89	33	0.330		175	229	594
1985	124	41	0.248	124	41	0.450		243	312	809
1986	158	30	0.160	158	30	0.530		310	368	953
1987	91	30	0.248	91	30	0.328		178	227	589
1988	97	19	0.164	97	19	0.306		190	213	551
1989	62	18	0.225	62	18	0.250		122	173	449
1990	71	9	0.113	71	9	0.225		139	156	404
1991	99	13	0.116	99	13	0.358		194	249	644
1992	49	10	0.169	49	10	0.182		96	126	328
1993	79	17	0.177	79	17	0.279		155	193	501
1994	99	15	0.132	99	15	0.344		194	239	619
1995	80	12	0.130	80	12	0.280		157	194	503
1996	73	15	0.170	73	15	0.282		143	196	507
1997	50	9	0.153	50	9	0.194		98	135	349
1998	91	11	0.108	91	11	0.369		178	256	664
1999	95	18	0.159	95	18	0.358		186	248	643
2000*	83	14	0.144	83	14	0.312		163	216	561

	Total returns		Prop.	Spawning escapement		Egg deposition (Millions)		% cons. req. achieved		Eggs per
Year	Small	Large	Large	Small	Large	Small	Large	Small	Eggs	100 sq. m
				Northeast River, Placentia						
1984	459	44	0.087	389	44	1.219	0.247	174	204	1084
1985	519	0	0.000	346	0	1.095	0.000	154	152	810
1986	879	39	0.042	645	39	2.313	0.214	288	352	1870
1987	350	16	0.044	317	16	1.104	0.091	142	166	884
1988	637	11	0.017	451	11	1.708	0.065	201	247	1312
1989	809	15	0.018	599	15	2.087	0.085	267	302	1606
1990	699	25	0.035	526	25	1.785	0.150	235	269	1431
1991	368	8	0.021	349	8	1.216	0.045	156	175	933
1992	956	46	0.046	919	46	3.732	0.260	410	555	2953
1993	980	65	0.062	842	65	3.419	0.368	376	527	2801
1994	710	70	0.090	670	70	2.721	0.396	299	434	2306
1995	774	74	0.087	646	74	2.613	0.419	288	422	2243
1996	1420	123	0.080	1102	123	4.598	0.696	492	736	3916
1997	723	185	0.204	592	182	2.462	1.029	264	486	2582
1998	885	287	0.245	622	285	1.869	1.612	278	484	2575
1999	363	167	0.315	250	159	0.970	0.902	112	260	1385
2000*	571	258	0.311	478	247	1.871	1.400	213	455	2420

*Preliminary

Table 9. Atlantic salmon smolt-to-adult survival (back to the river) in terms of small salmon and virgin grilse for Northeast Brook, Trepassey (SFA 9).

	Northeast Brook (Trepassey)				
Year	Smolts (No.)	Small Salmon (No.)	Virgin Grilse (No.)	% Survival	
(i)	year i	year i + 1	year i + 1	Small Salmon	Virgin Grilse
1986	1117	91	91	8.1	8.1
1987	1404	97	89	6.9	6.3
1988	1692	62	62	3.7	3.7
1989	1708	71	67	4.2	3.9
1990	1902	99	91	5.2	4.8
1991	1911	49	42	2.6	2.2
1992	1674	79	75	4.7	4.5
1993	1849	99	90	5.4	4.9
1994	944	80	74	8.5	7.8
1995	792	73	60	9.2	7.6
1996	1749	50	46	2.9	2.6
1997	1829	91	88	5.0	4.8
1998	1727	95	88	5.5	5.1
1999	1419	83	76	5.8	5.4
2000	1740				

Table 10. Estimates of egg deposition, smolt production by year class, and egg-to-smolt survival for Northeast Brook,Trepassey.

Year-class (eggs)	Estimated egg deposition (No.)	Smolt production (No.)	Survival (%)	Eggs/100 m^2
1984	330308	1604	0.49	594
1985	449780	1611	0.36	809
1986	529817	2442	0.46	953
1987	327601	1476	0.45	589
1988	306446	1787	0.58	551
1989	249768	1232	0.49	449
1990	224730	816	0.36	404
1991	358191	1221	0.34	644
1992	182172	1985	1.09	328
1993	278606	2087	0.75	501
1994	344246	1496	0.43	619
1995	279514	(1304)[1]	0.47	503

[1]To age 4 smolts in 2000

Table 11. Incidence of net marks on salmon examined in Middle Brook, 1997-2000 and Northeast River Placentia, 2000 .

River	Year	Fish checked			Number net marked			% Net marked		
		Small	Large	Total	Small	Large	Total	Small	Large	Total
Middle Brook	1997	1141	242	1383	196	23	219	17.2	9.5	15.8
	1998	1055	89	1144	128	5	133	12.1	5.6	11.6
	1999	1393	121	1514	-	-	68	-	-	4.5
	2000	1660	189	1849	122	21	143	7.3	11.1	7.7
Northeast River (Plac.)	2000	320	66	386	24	5	29	7.5	7.6	7.5

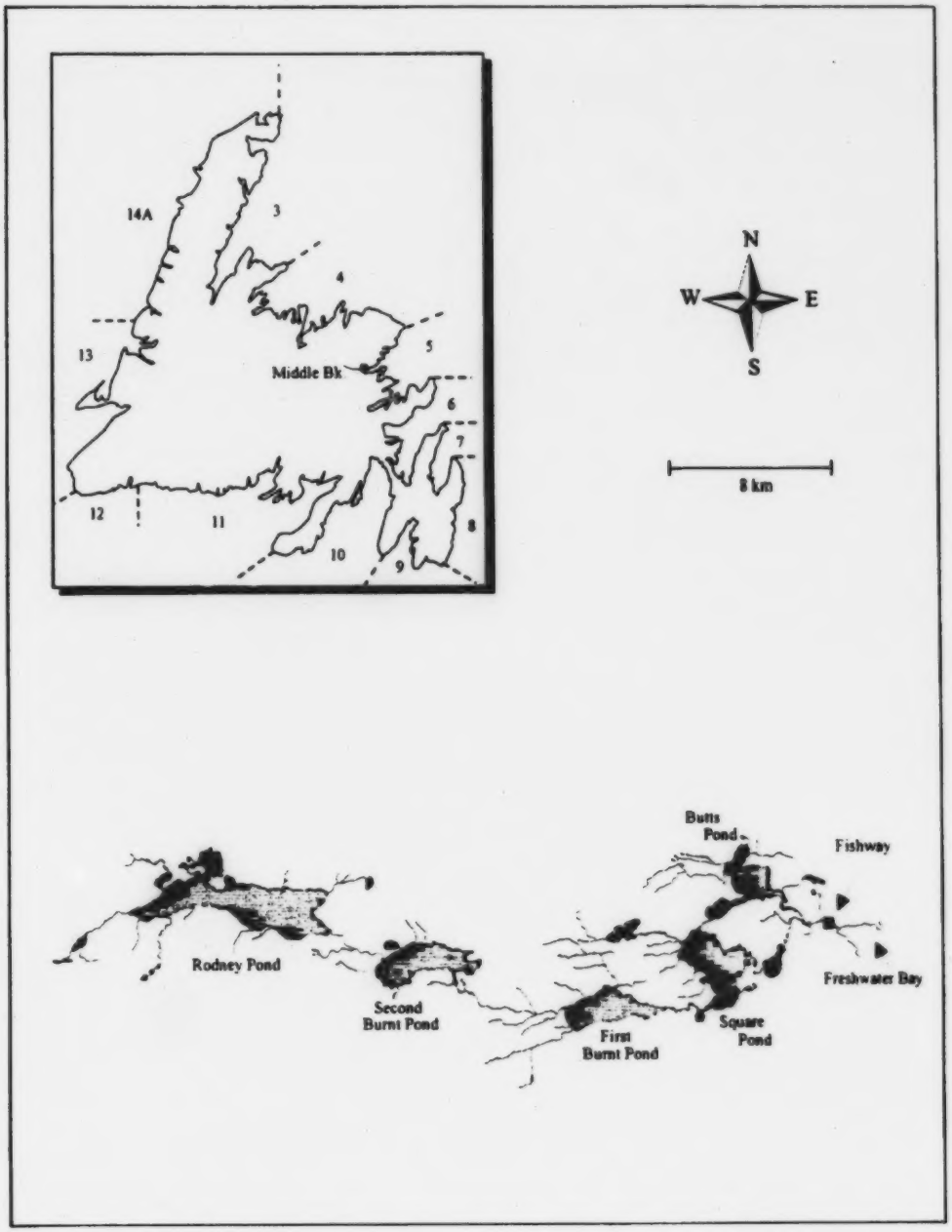

Fig. 1. Map showing the Middle Brook watershed and location of the fishway (square symbol). Inset shows the Salmon Fishing Areas in Newfoundland and the location of Middle Brook.

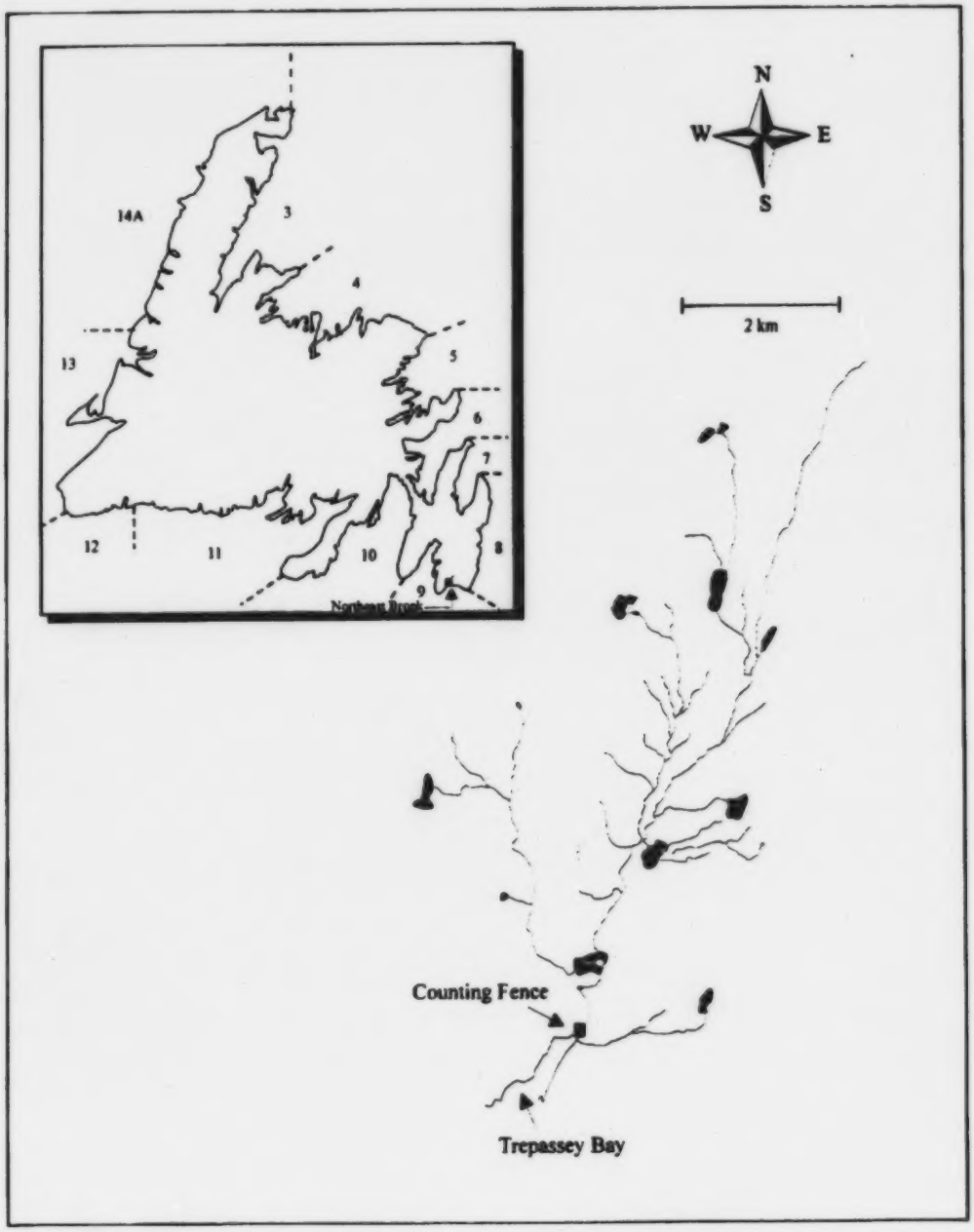

Fig. 2. Map showing the Northeast Brook (Trepassey) watershed and location of the counting fence (square symbol). Inset shows the Salmon Fishing Areas in Newfoundland and the location of Northeast Brook (Trepassey).

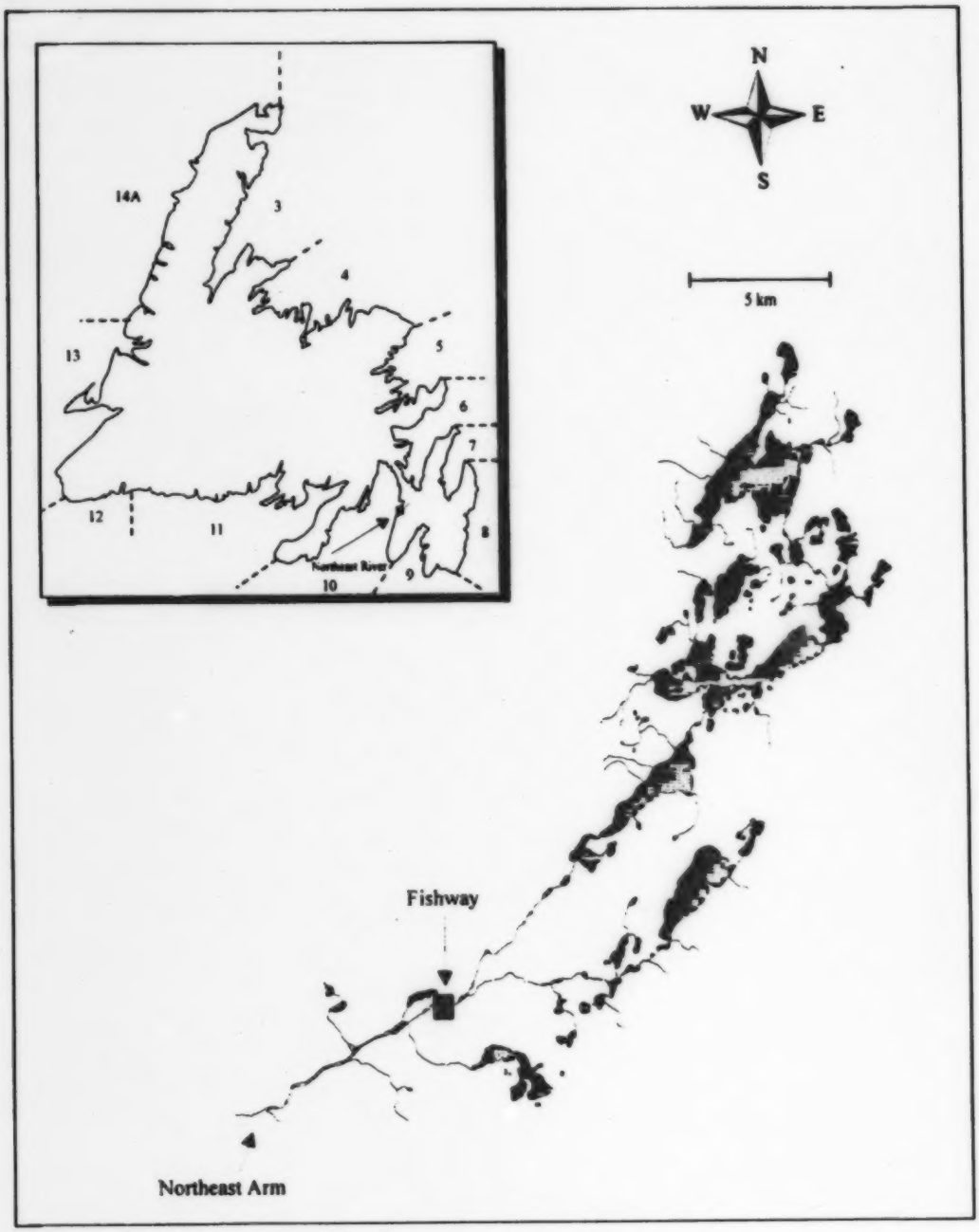

Fig. 3. Map showing the Northeast River (Placentia) watershed and location of the fishway (square symbol). Inset shows the Salmon Fishing Areas in Newfoundland and the location of Northeast River (Placentia).

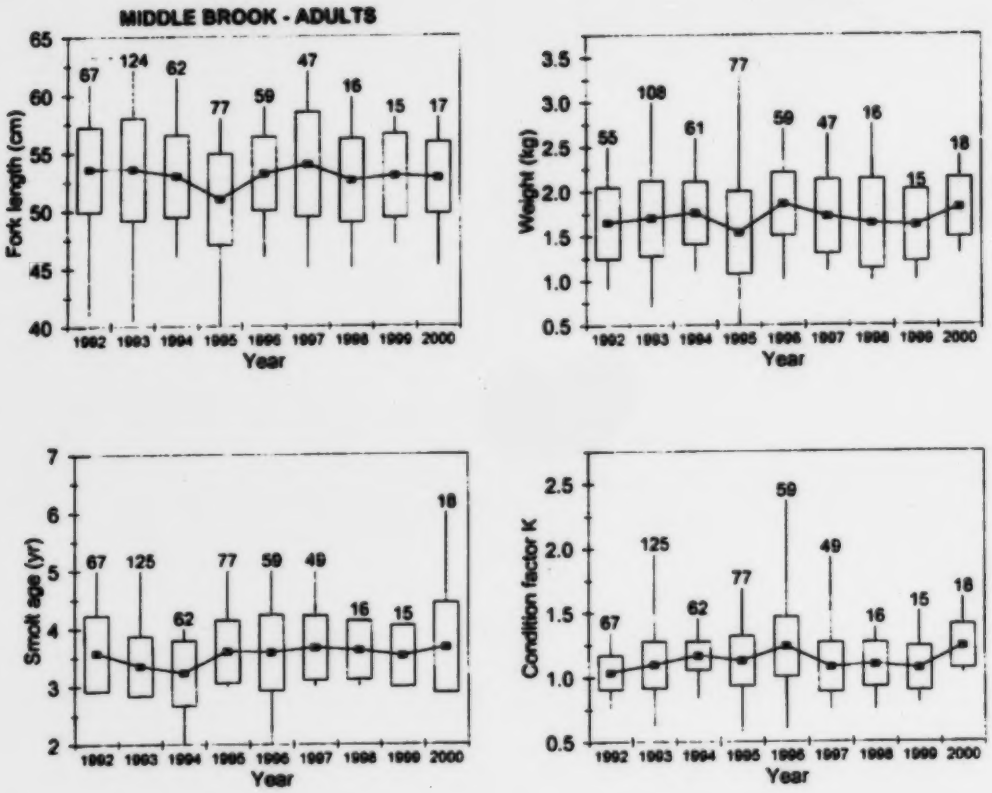

Fig. 4. Mean fork length, mean weight, mean smolt age, and mean condition factor for virgin grilse from Middle Brook, 1992-2000. The rectangle around each point denotes the standard deviation; the vertical line is the range; the number above the vertical line is the sample size.

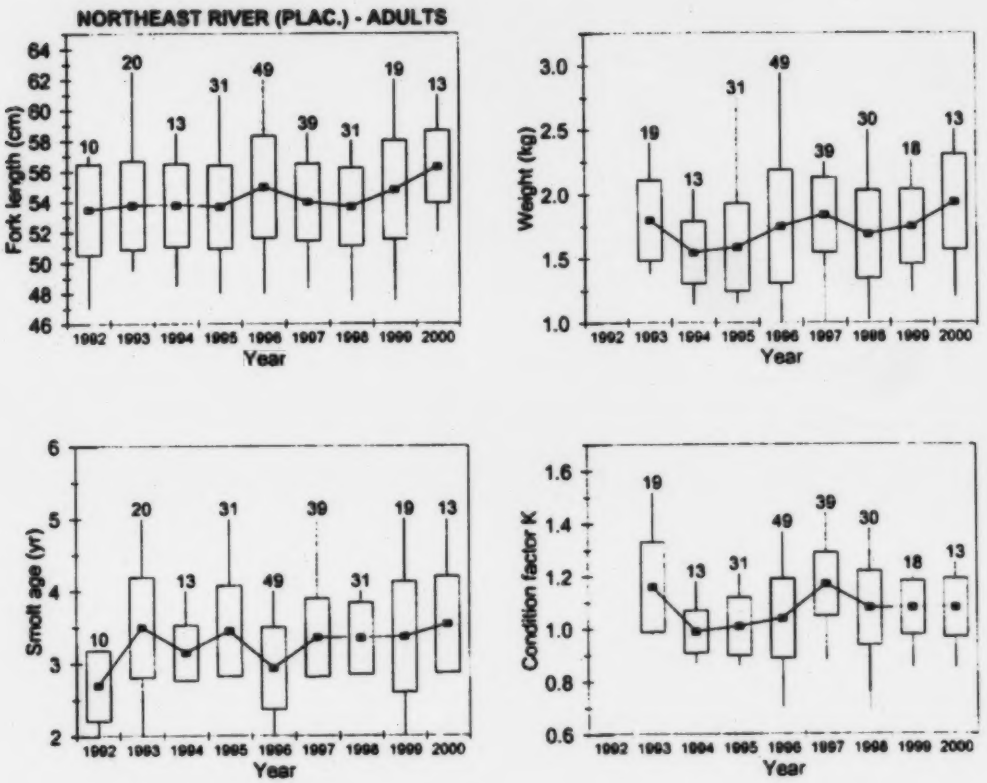

Fig. 5. Mean fork length, mean weight, mean smolt age, and mean condition factor for virgin grilse from Northeast River, Placentia, 1992-2000. The rectangle surrounding each point denotes the standard deviation; the vertical line is the range; the number above the vertical line is the sample size.

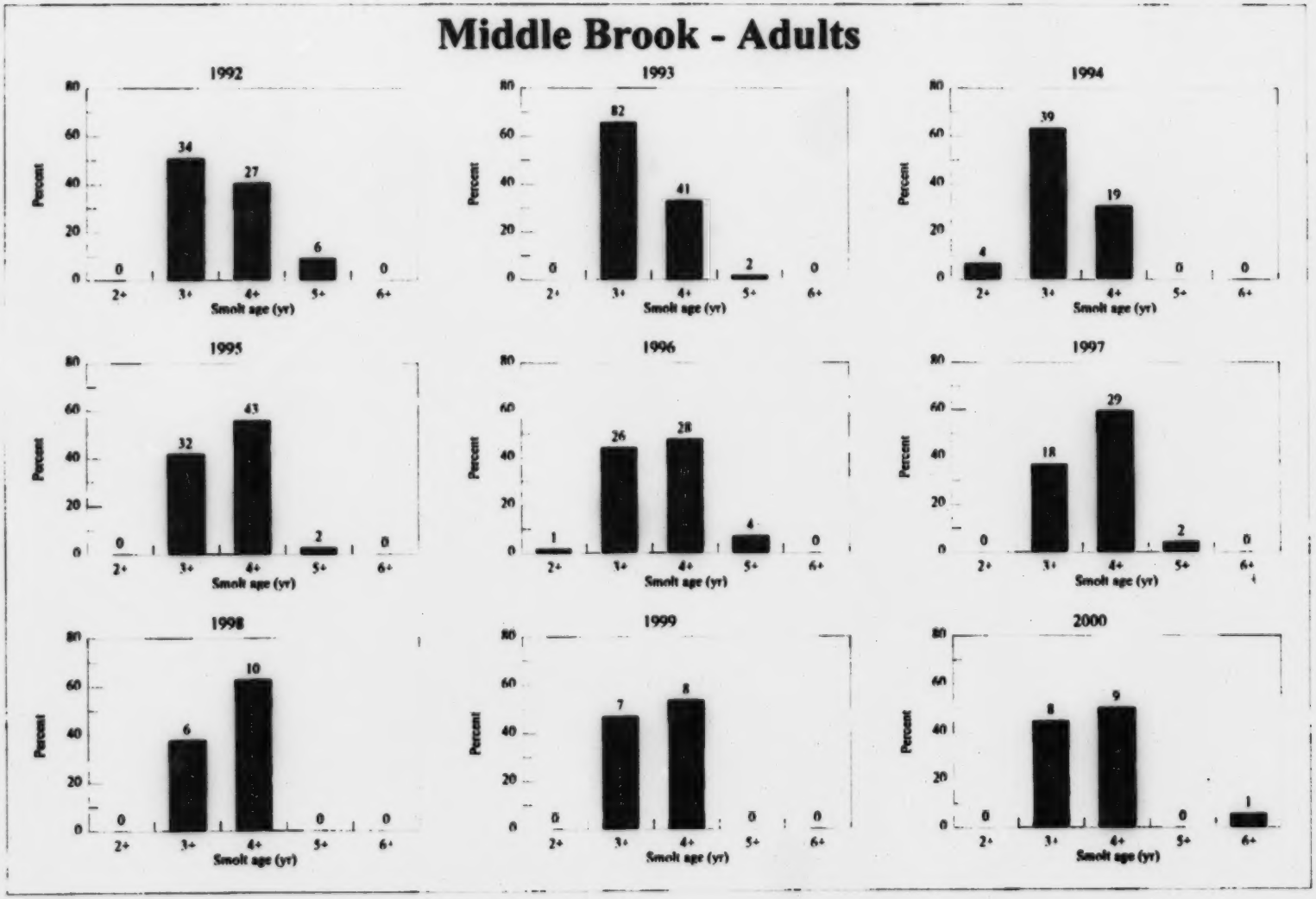

Fig. 6. Smolt age composition for virgin grilse from Middle Brook, 1992-2000. The number above each bar denotes sample size.

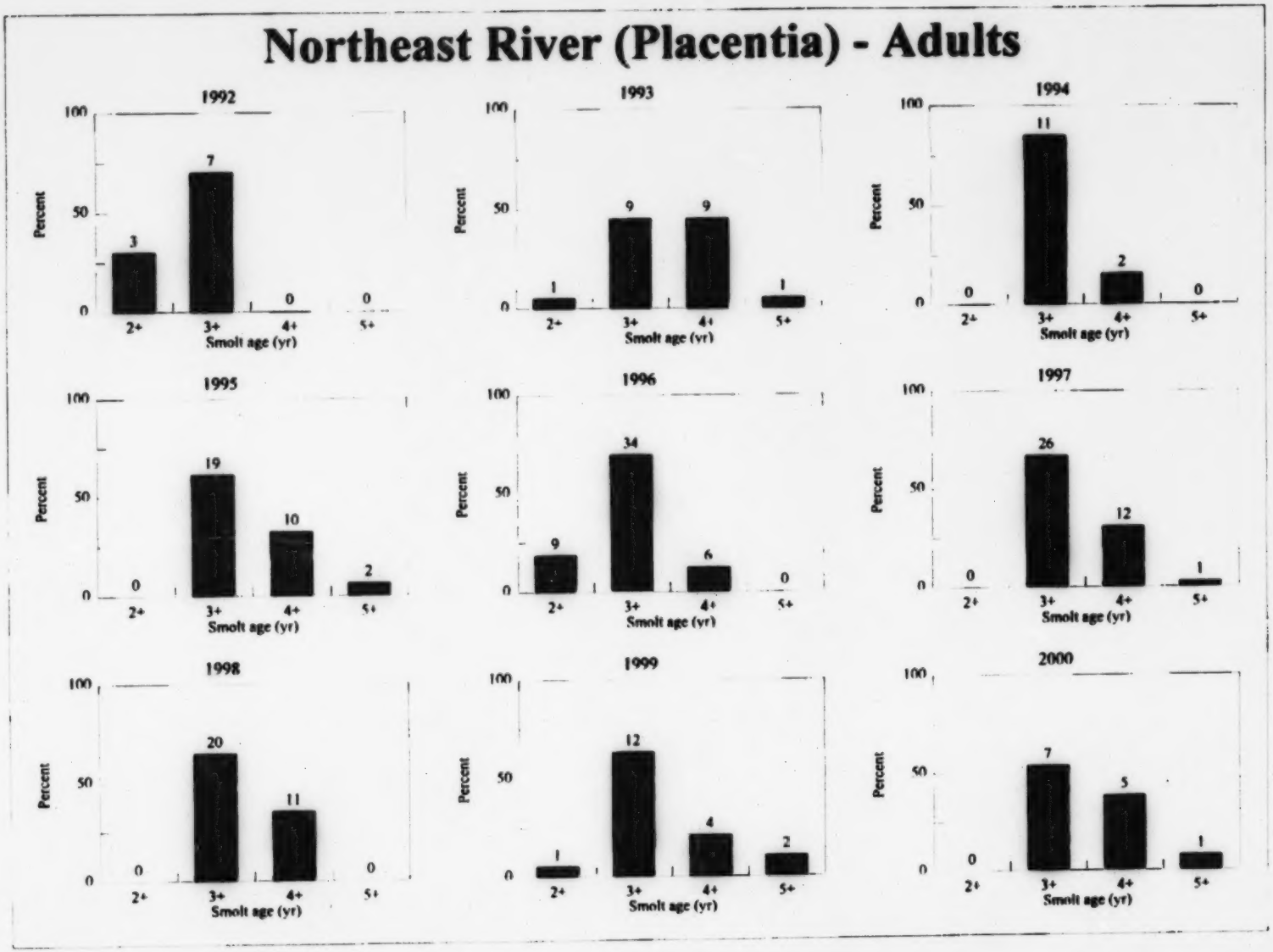

Fig. 7. Smolt age composition for virgin grilse from Northeast River, Placentia, 1992-2000. The number above each bar denotes sample size.

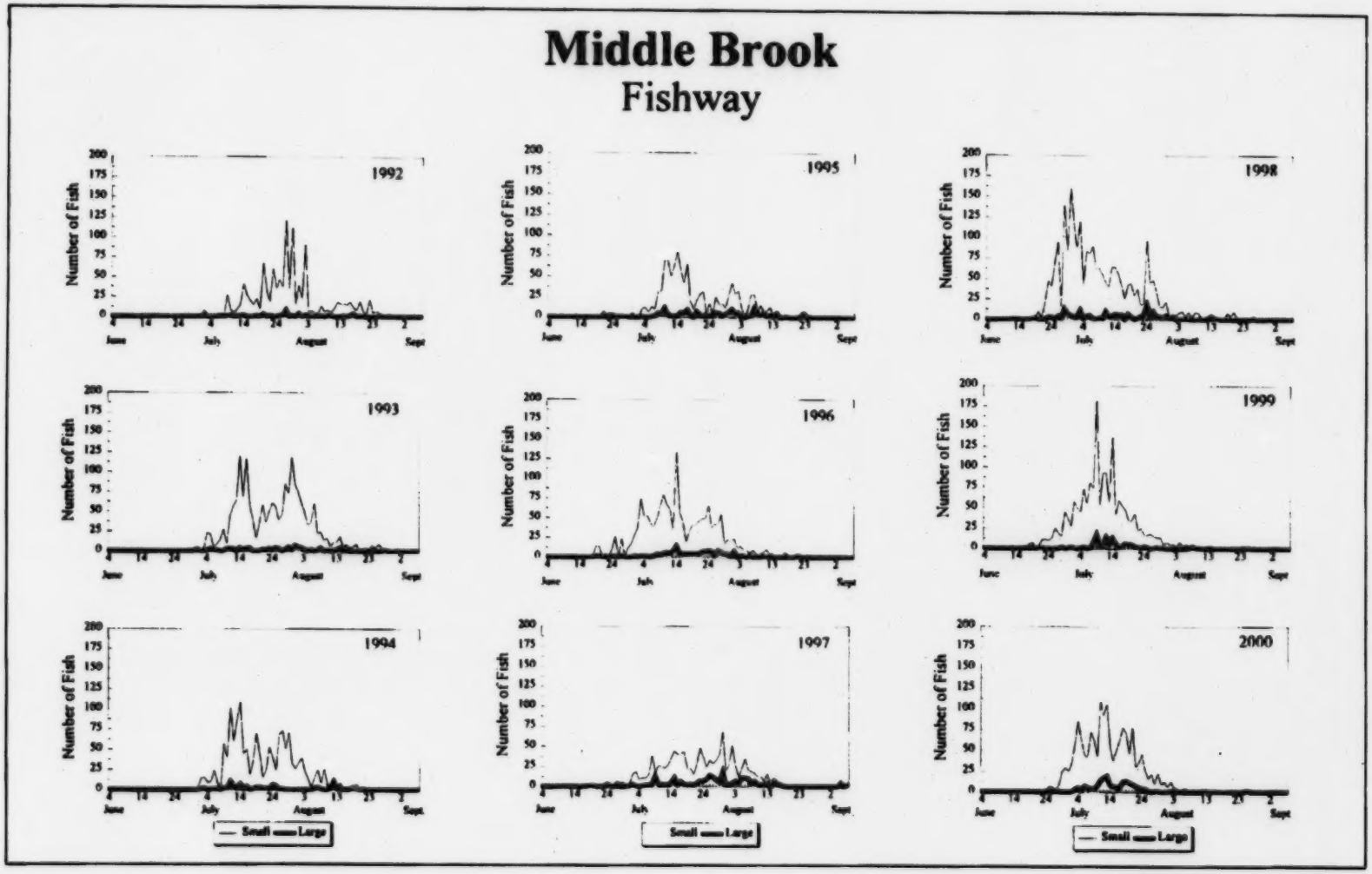

Fig. 8. Daily counts of small and large salmon at the Middle Brook fishway during the moratorium years, 1992-2000.

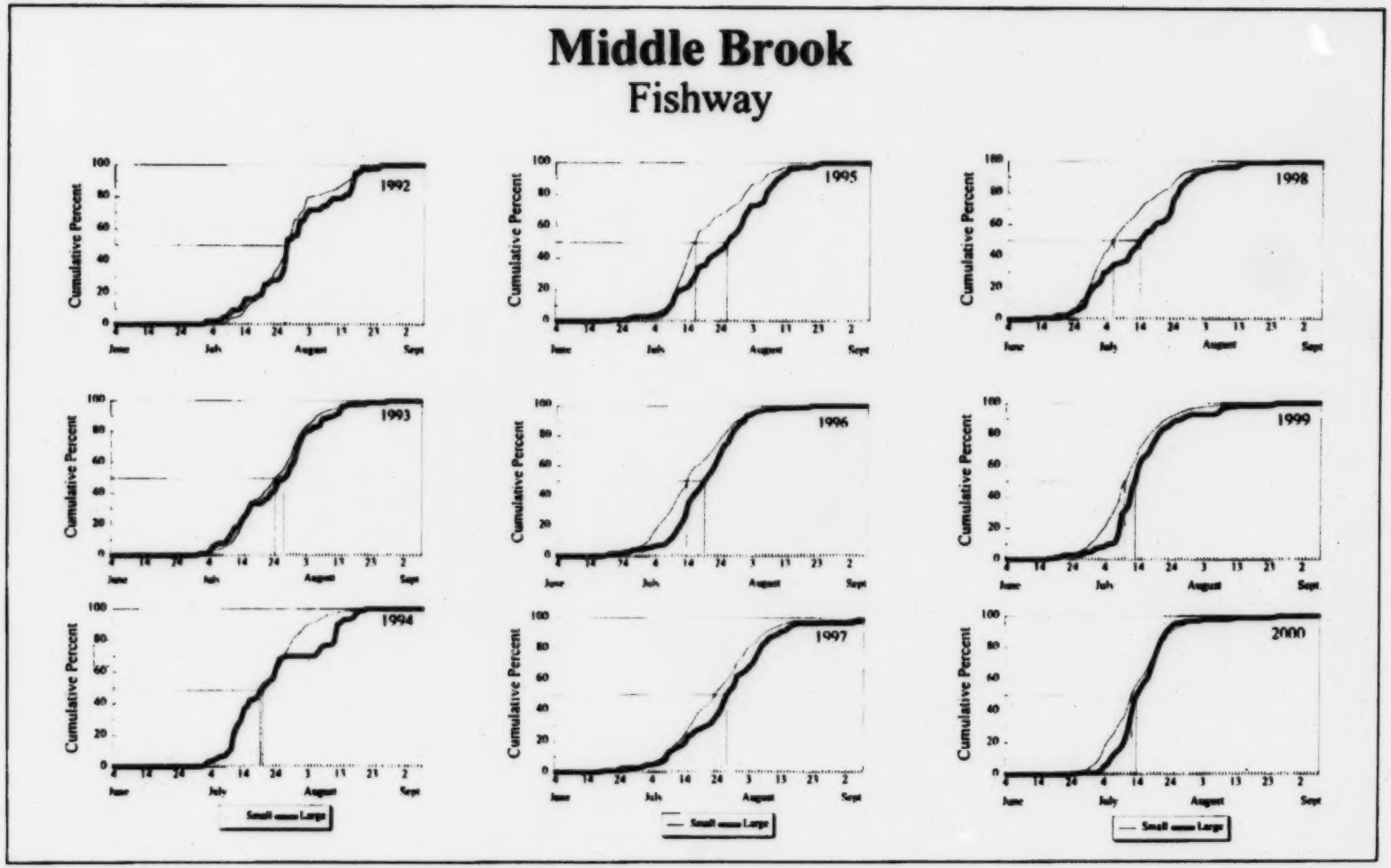

Fig. 9. Daily cumulative percent of small and large salmon at the Middle Brook fishway during the moratorium years, 1992-2000. Dates of median counts are also shown.

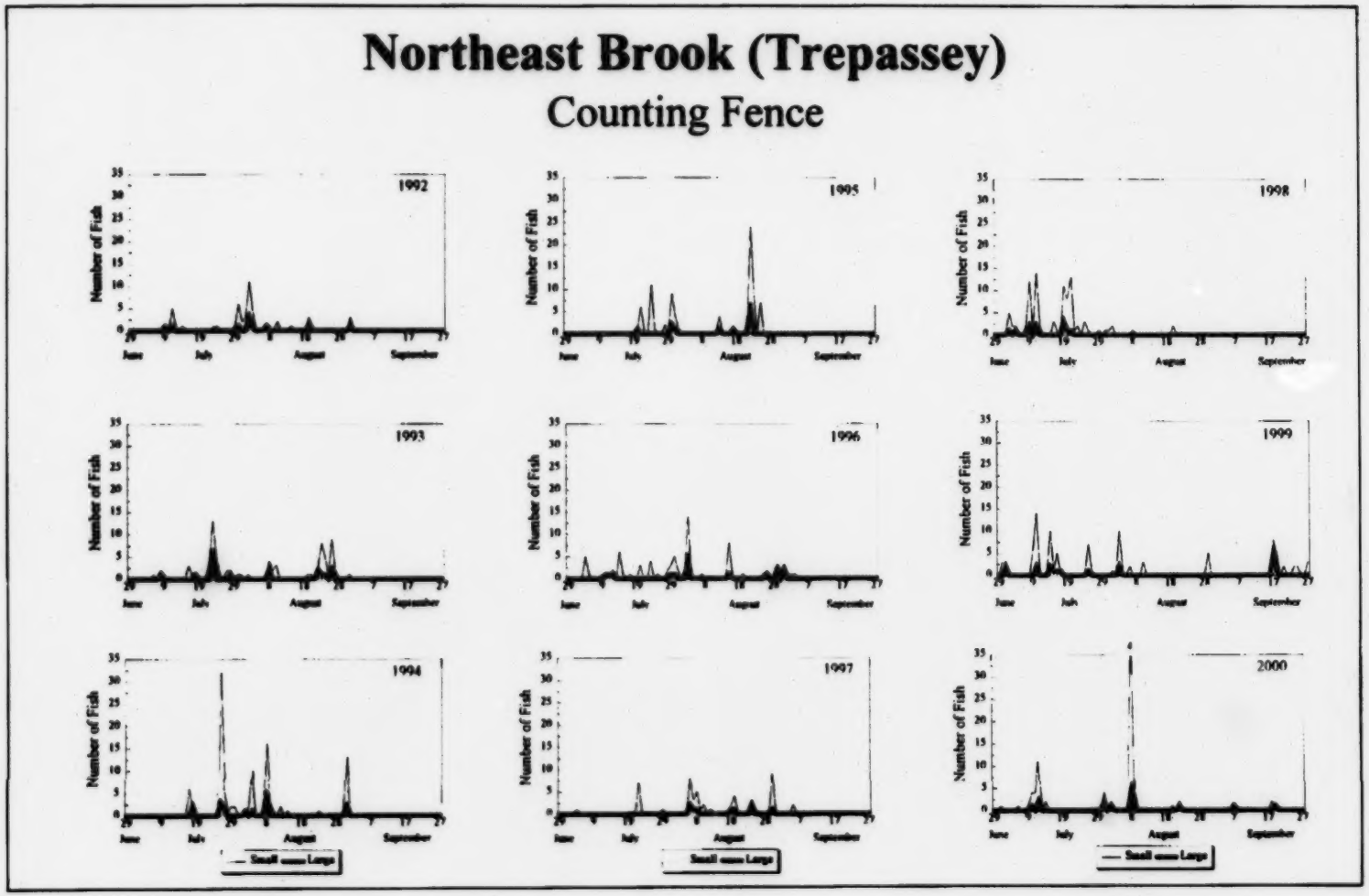

Fig. 10. Daily counts of small and large salmon at the Northeast Brook (Trepassey) counting fence, during the moratorium years, 1992-2000.

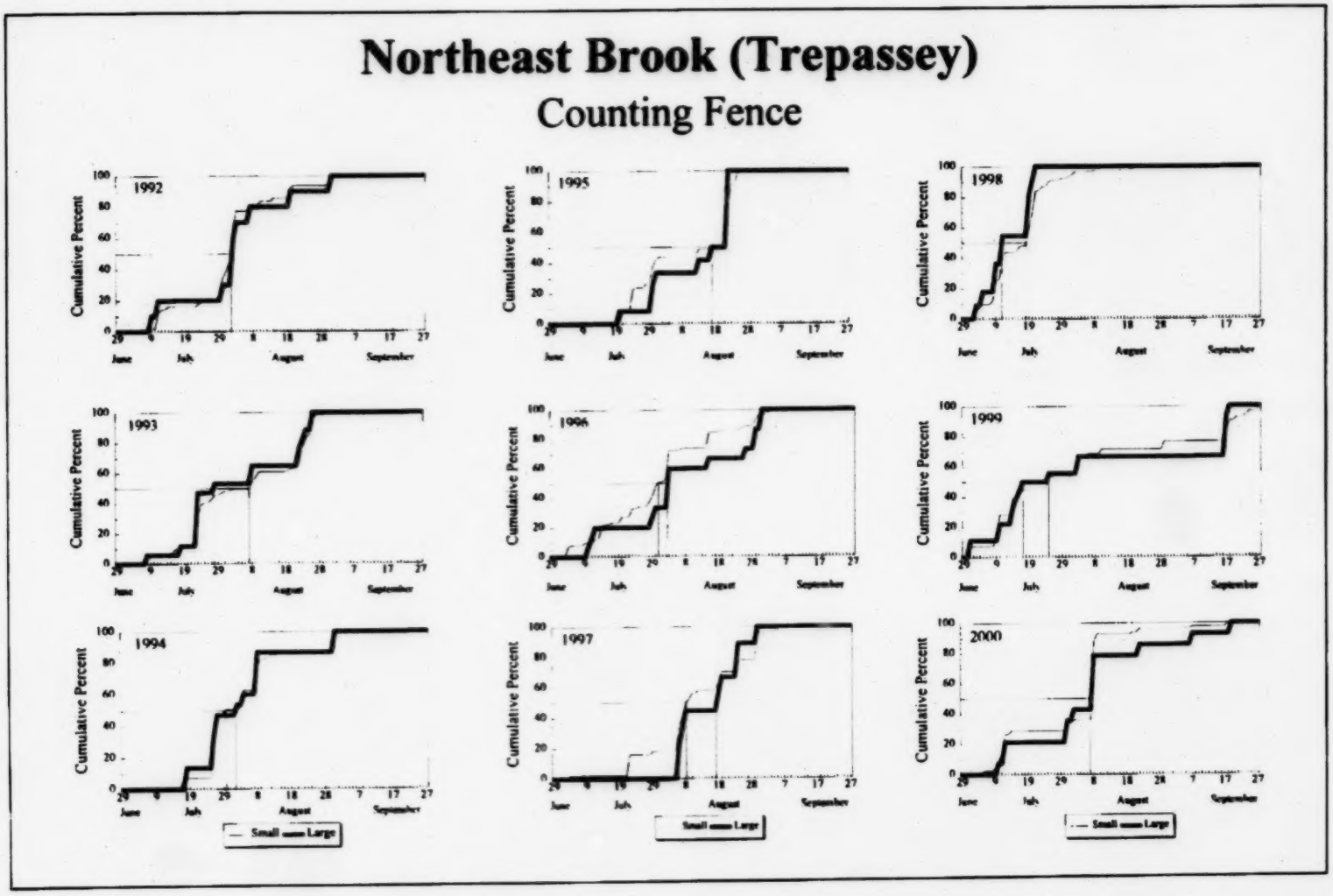

Fig. 11. Daily cumulative percent of small and large salmon at the Northeast Brook (Trepassey) counting fence, during the moratorium years, 1992-2000. Dates of median counts are also shown.

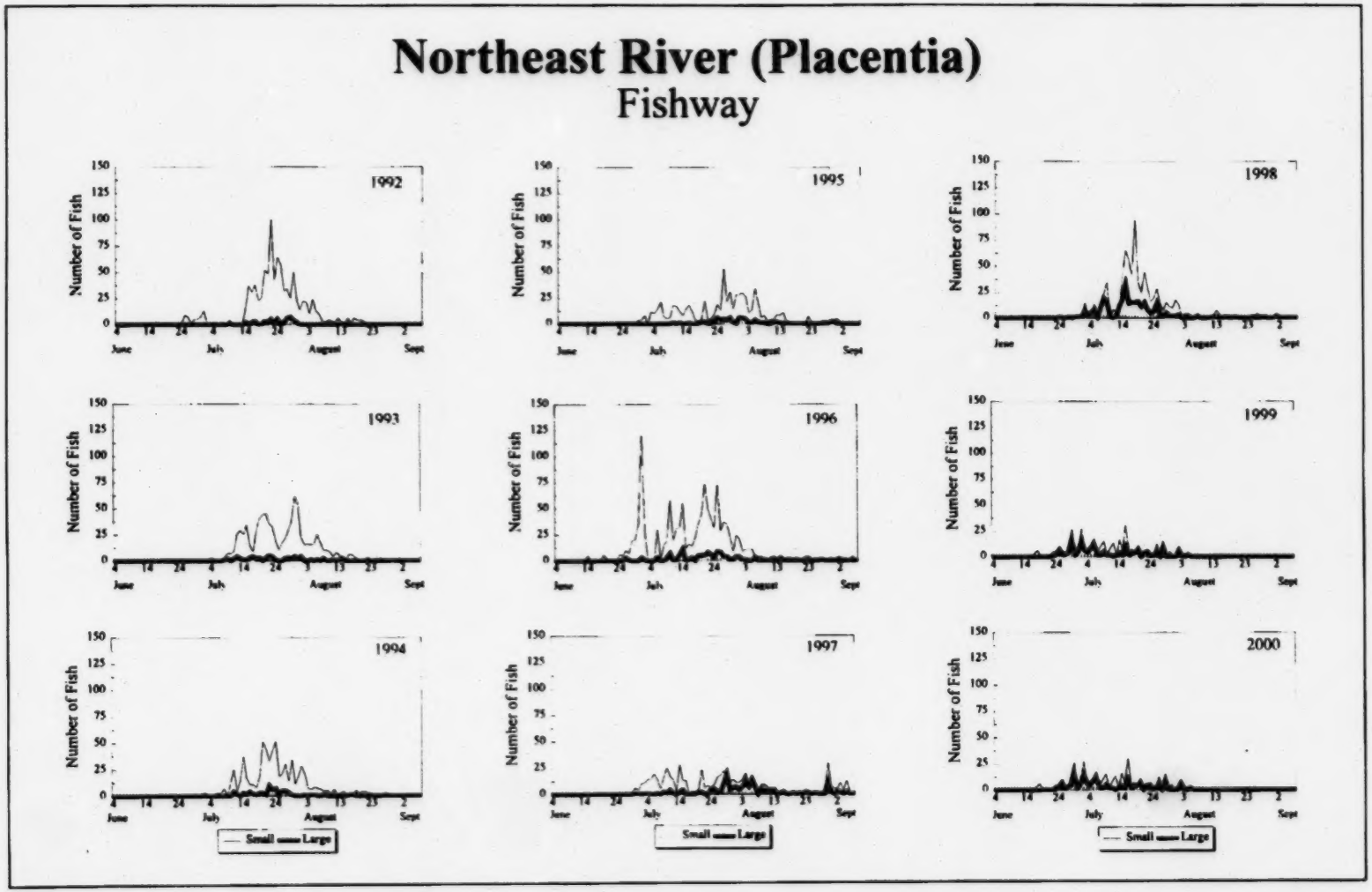

Fig. 12. Daily counts of small and large salmon at the fishway in Northeast River (Placentia) during the moratorium years, 1992-2000.

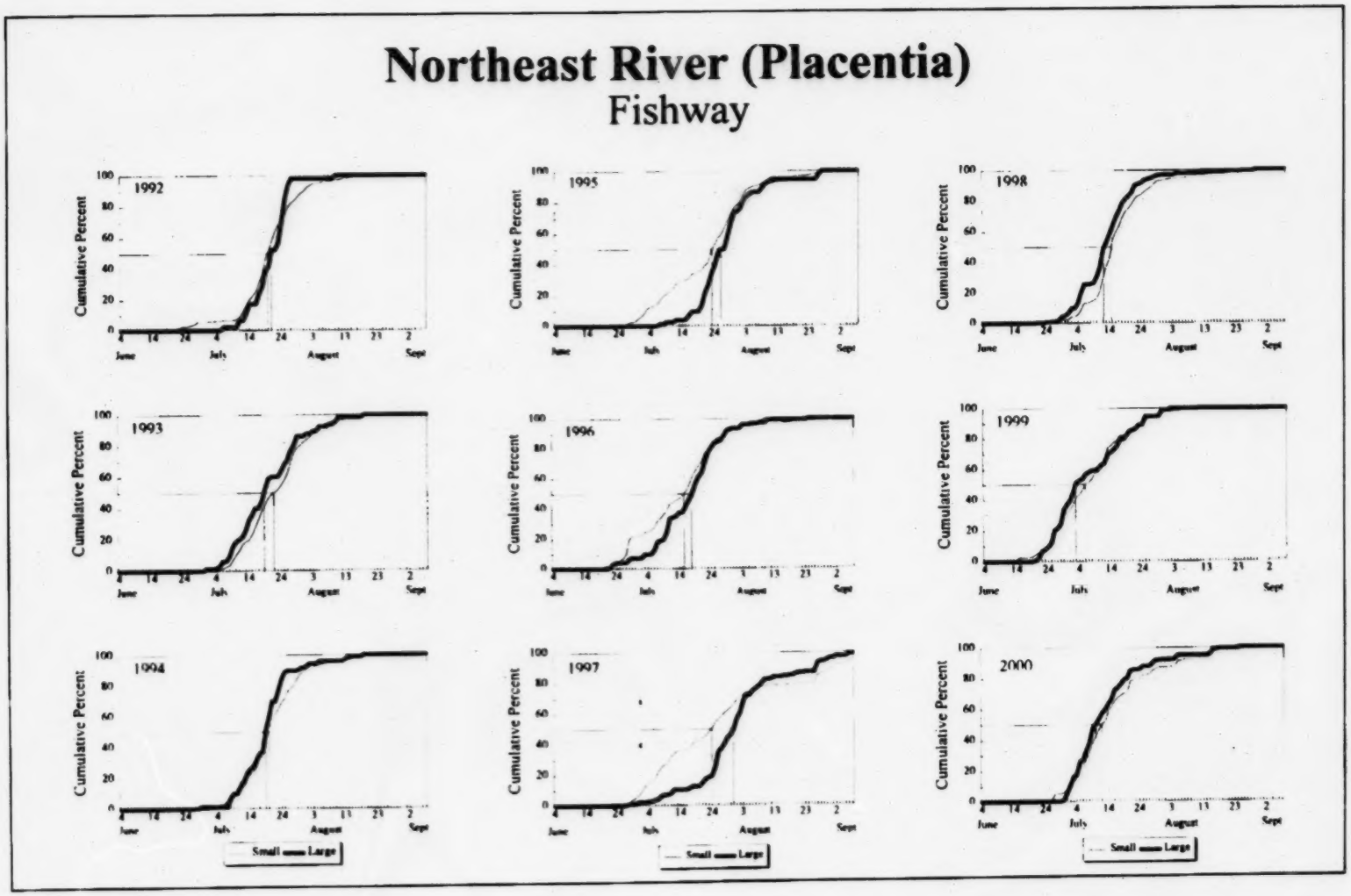

Fig. 13. Daily cumulative percent of small and large salmon at the fishway in Northeast River (Placentia) during the moratorium years, 1992-2000. Dates of median counts are also shown.

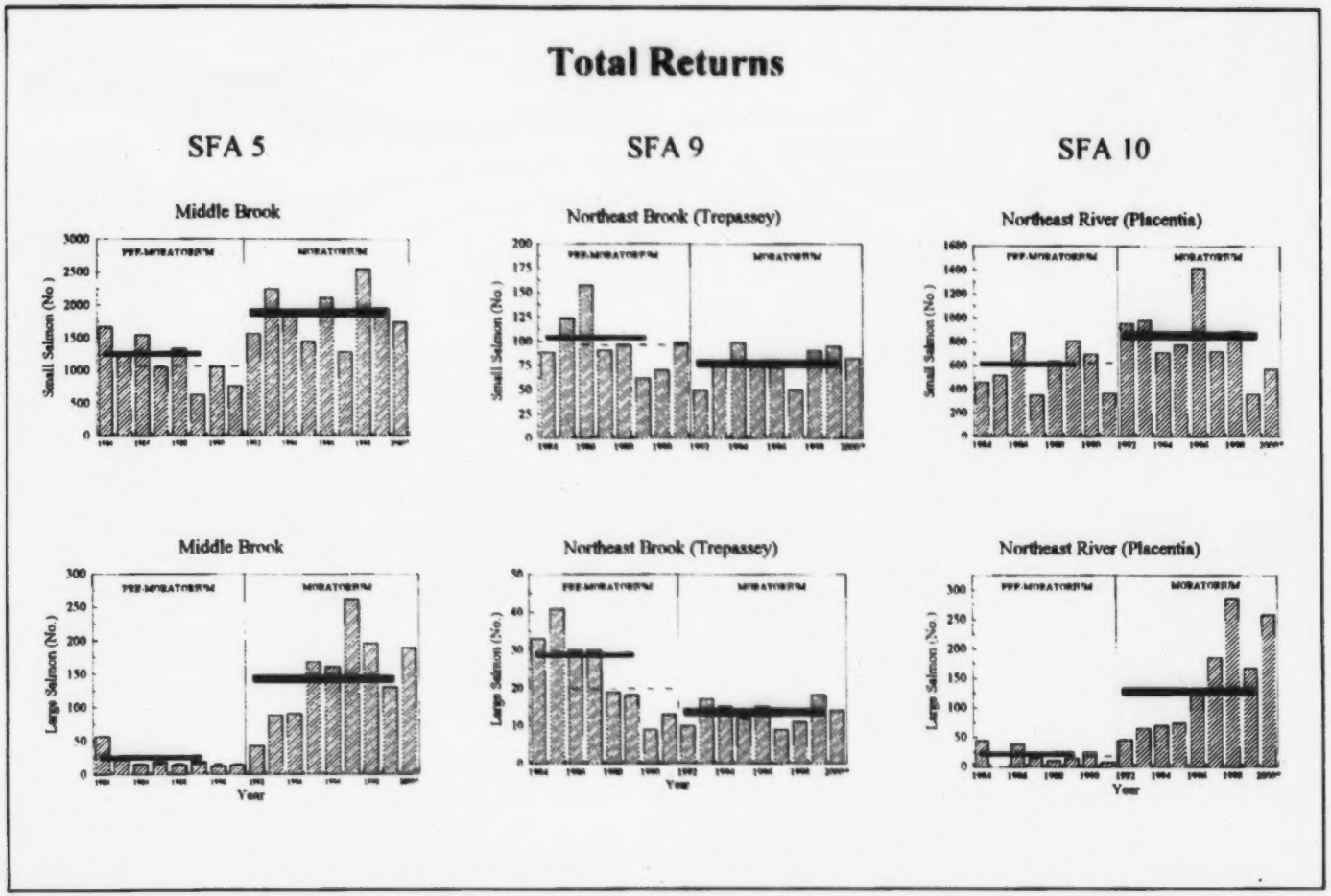

Fig. 14. Total returns of small and large salmon to Middle Brook (SFA 5), Northeast Brook, Trepassey (SFA 9) and Northeast River, Placentia (SFA 10), 1984-2000. The thin solid horizontal line represents the 1984-89 mean, the broken line the 1986-91 mean, and the thick solid line the 1992-99 mean.

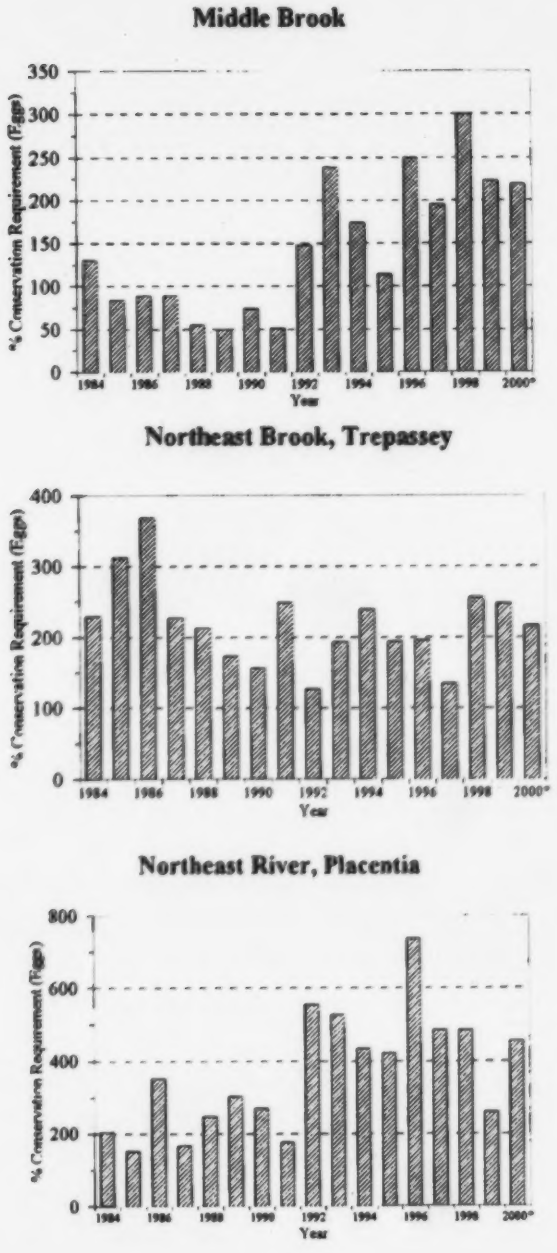

Fig. 15. Percentage conservation egg requirement achieved for Middle Brook (SFA 5), Northeast Brook, Trepassey (SFA 9) and Northeast River, Placentia (SFA 10), 1984-2000.

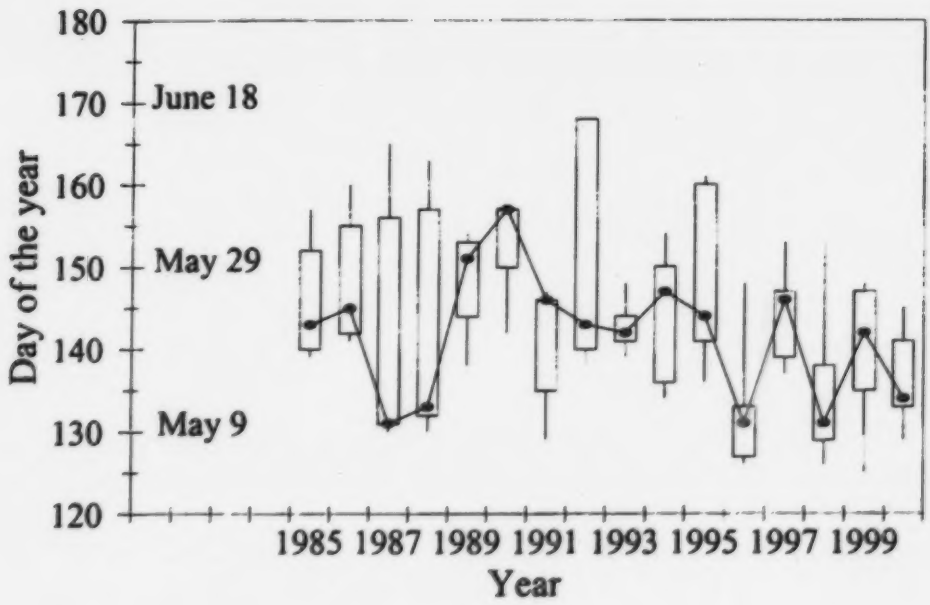

Fig. 16. Annual variation in smolt run timing for Northeast Brook, Trepassey, 1985-2000. Vertical lines represent the 10th and 90th percentiles, rectangles are the 25th and 75th percentiles, and the point within each rectangle is the median.

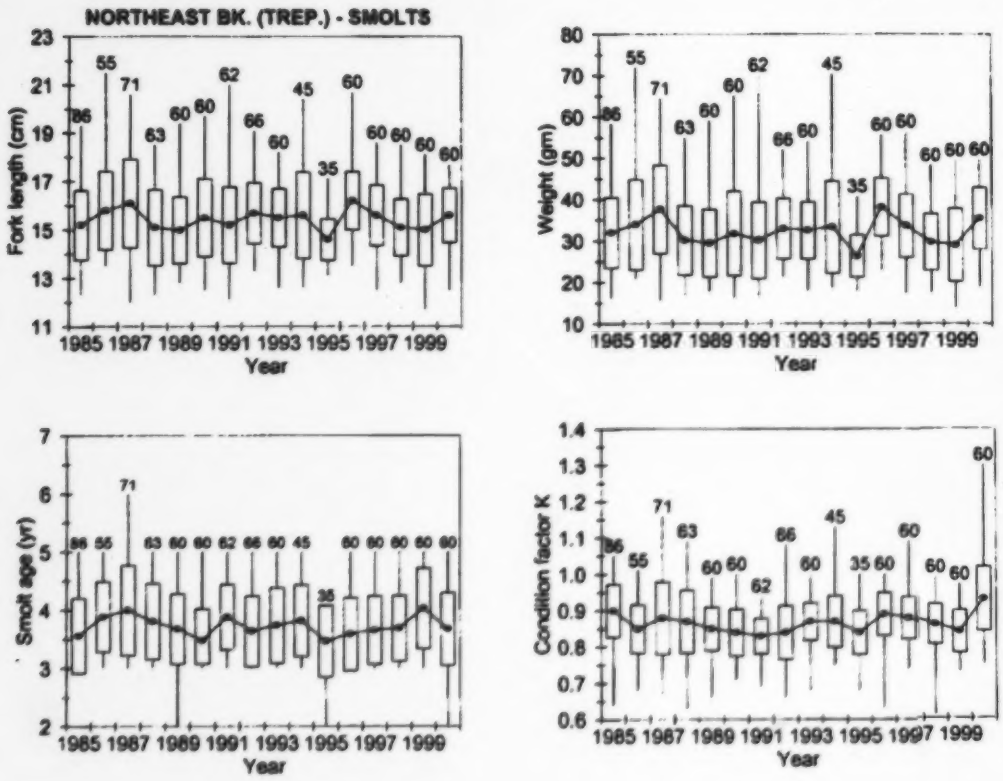

Fig. 17. Mean fork length, mean weight, mean smolt age, and mean condition factor for smolts from Northeast Brook, Trepassey, 1985-2000. The rectangle around each point denotes the standard deviation; the vertical line is the range; the number above the vertical line is the sample size.

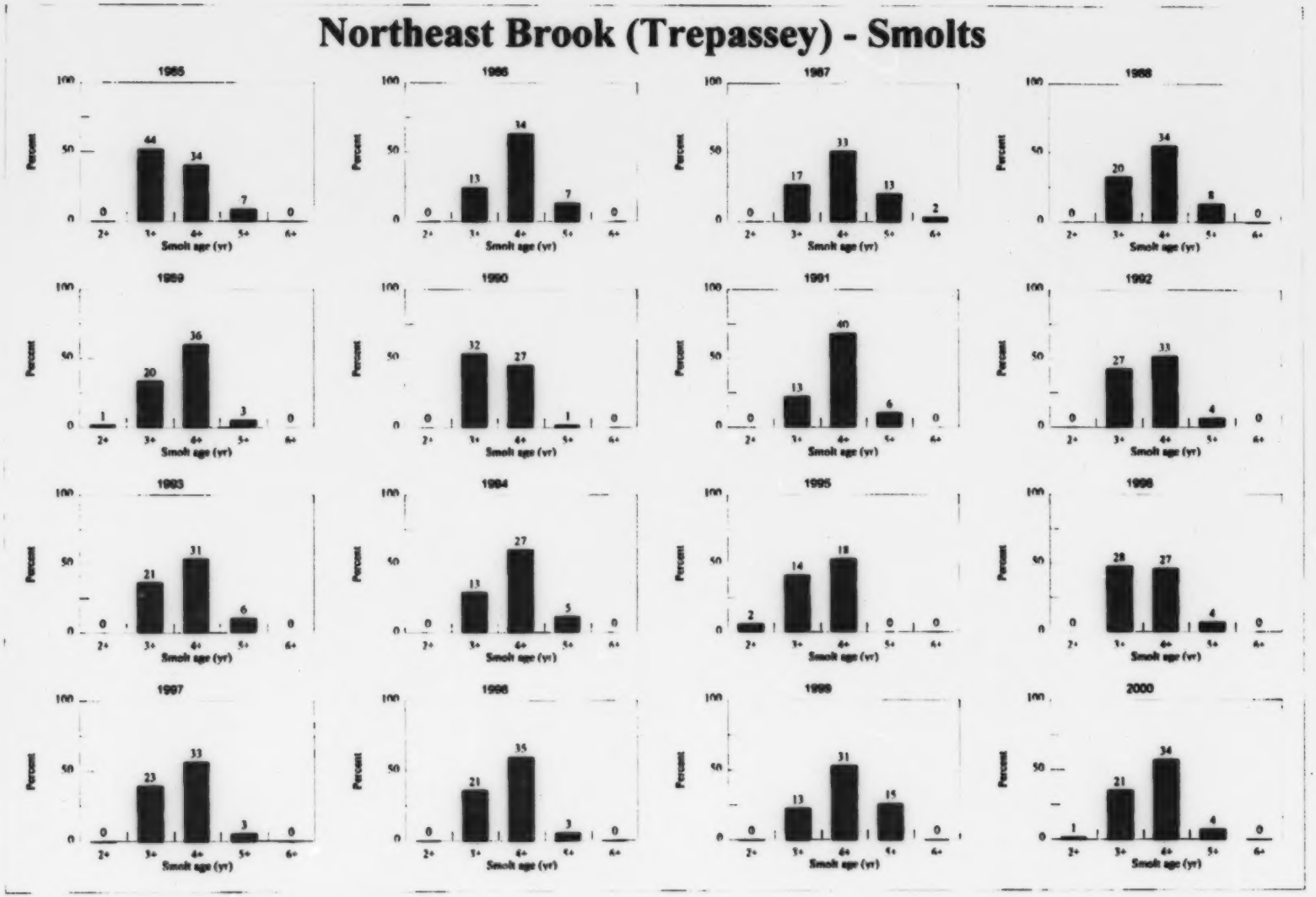

Fig. 18. Age composition for smolts from Northeast Bk., Trepassey, 1985 - 2000. The number above each bar denotes sample size.

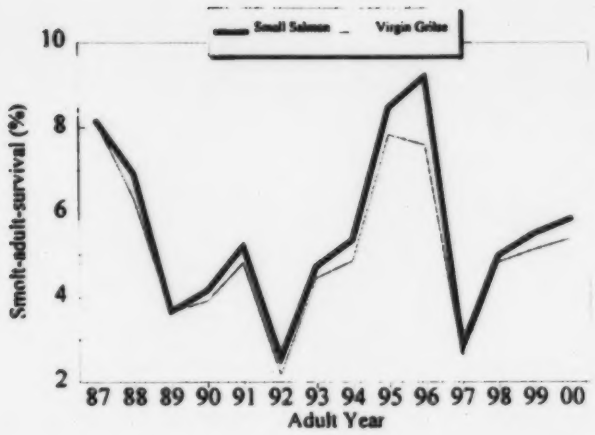

Fig. 19. Atlantic salmon smolt-to-adult survival (back to the river) in terms of small salmon and virgin grilse for Northeast Brook, Trepassey (SFA 9).

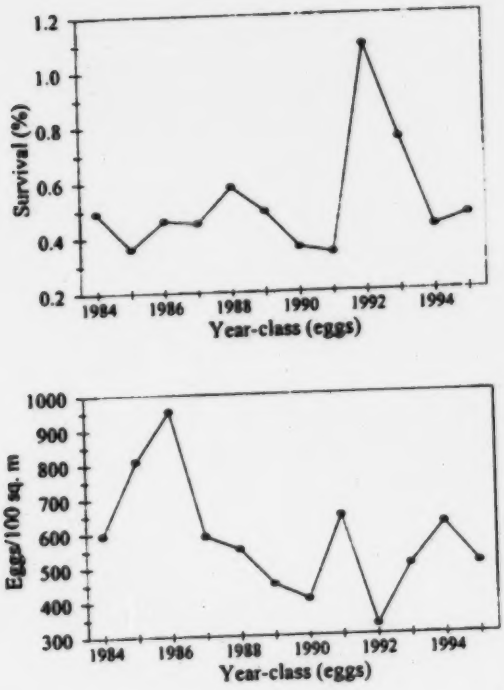

Fig. 20. Egg-to-smolt survival and egg deposition rate for Northeast Brook, Trepassey.

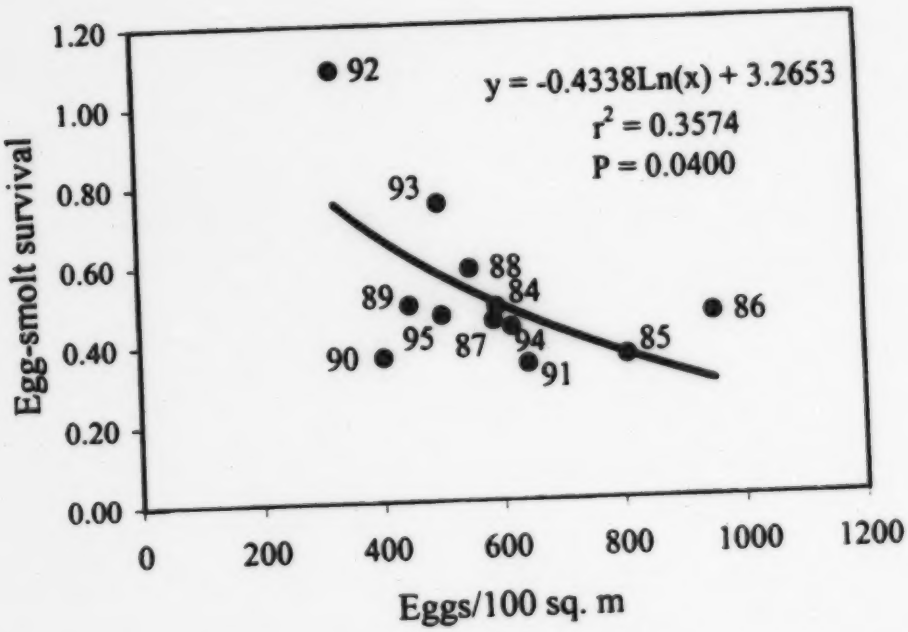

Fig. 21. Relationship between egg-to-smolt survival and egg deposition for Northeast Brook, Trepassey.

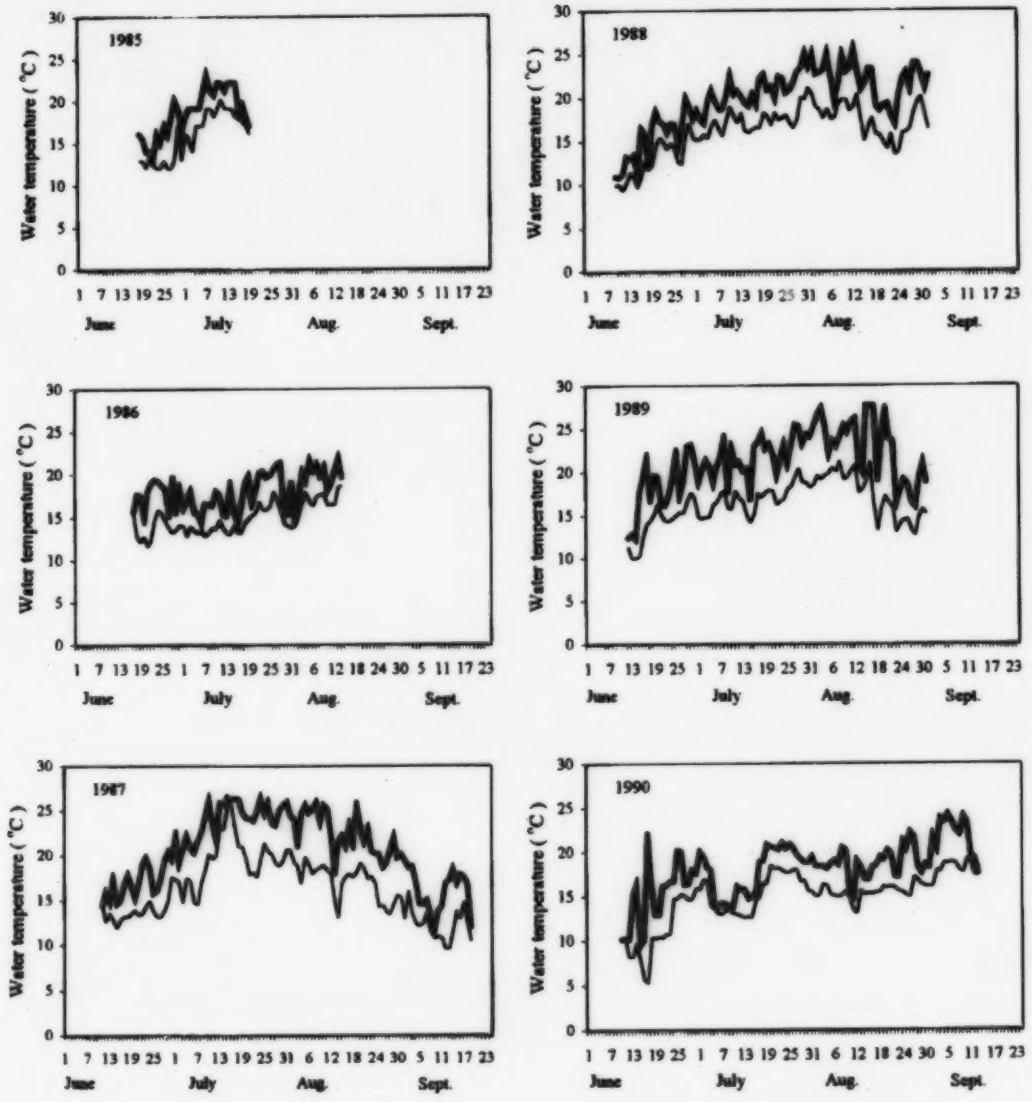

Fig. 22. Maximum and minimum water temperatures (°C) measured at the fishway in Middle Brook, 1985-2000.

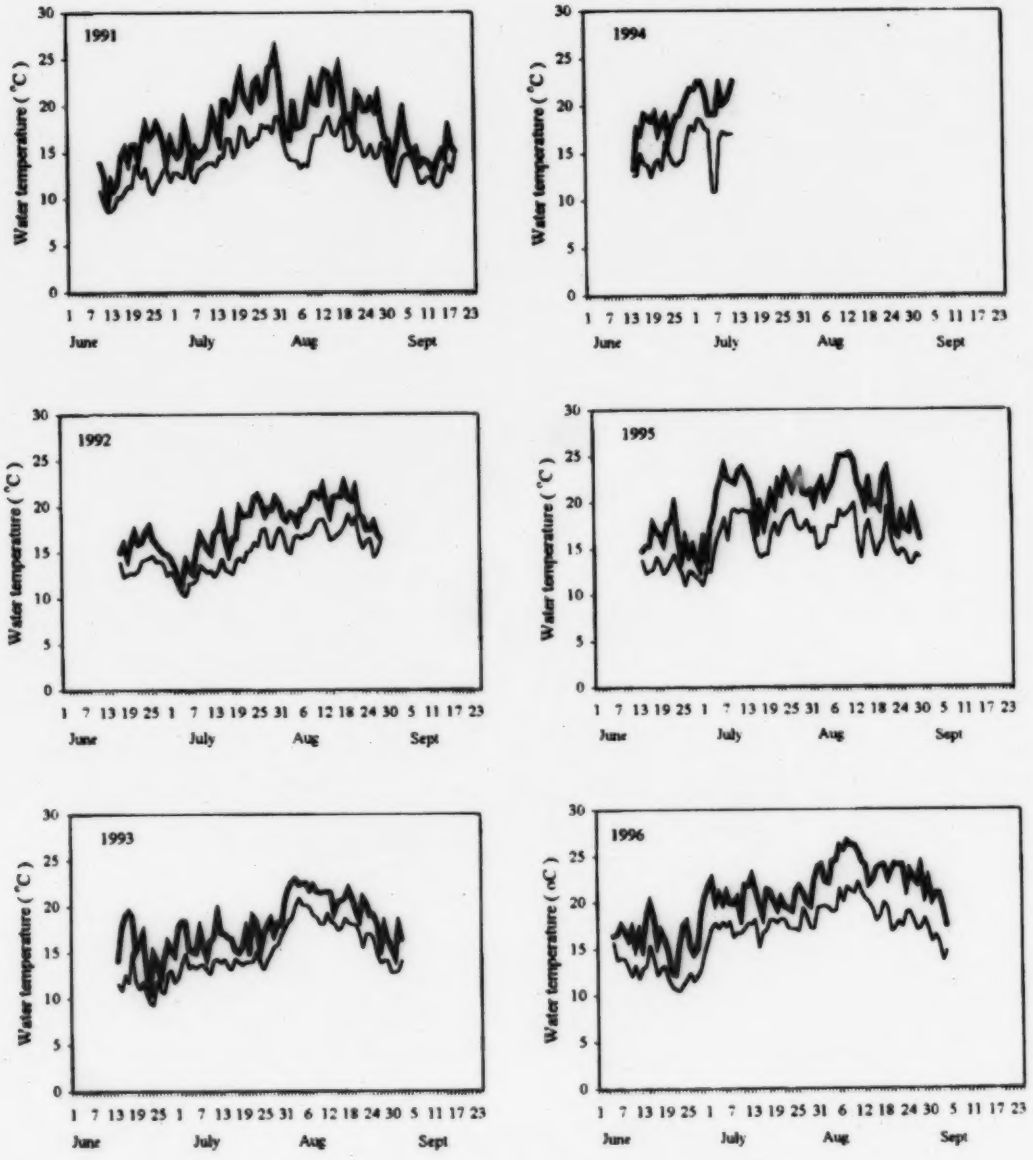
1991
1994
1992
1995
1993
1996
Water temperature (°C)
0 5 10 15 20 25 30
1 7 13 19 25 1 7 13 19 25 31 6 12 18 24 30 5 11 17 23
June
July
Aug
Sept

Fig. 22 (cont'd)

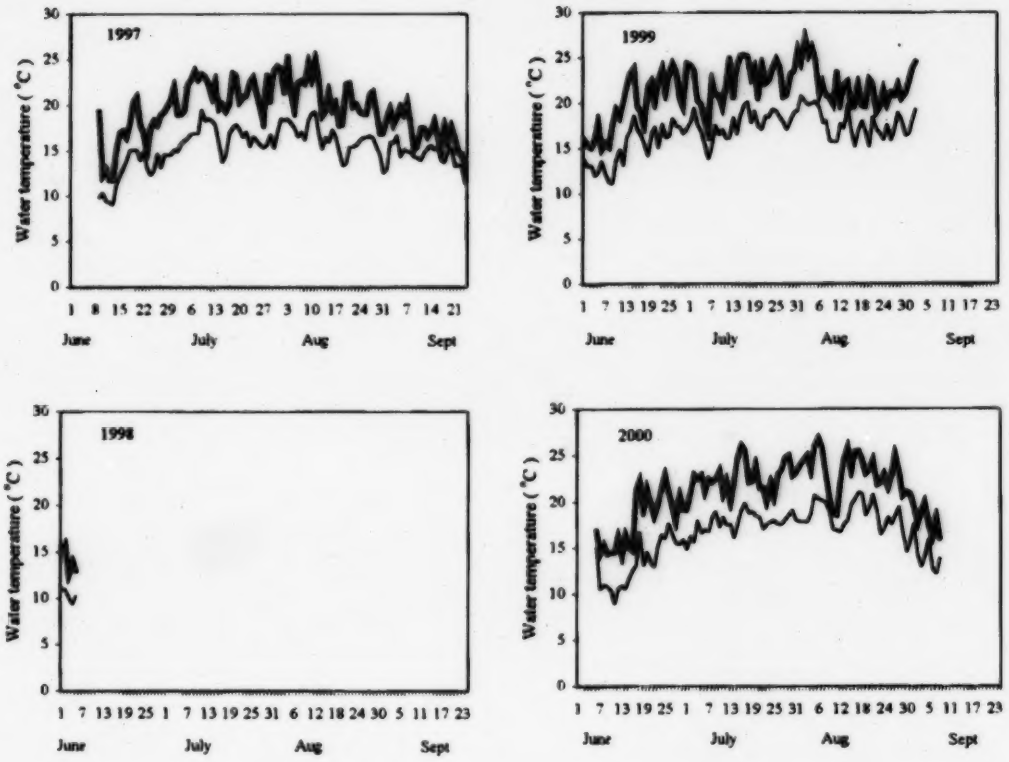
1997
1999
1998
2000
Water temperature (°C)
0
5
10
15
20
25
30
1 8 15 22 29 6 13 20 27 3 10 17 24 31 7 14 21
1 7 13 19 25 1 7 13 19 25 31 6 12 18 24 30 5 11 17 23
June
July
Aug
Sept

Fig. 22 (cont'd)

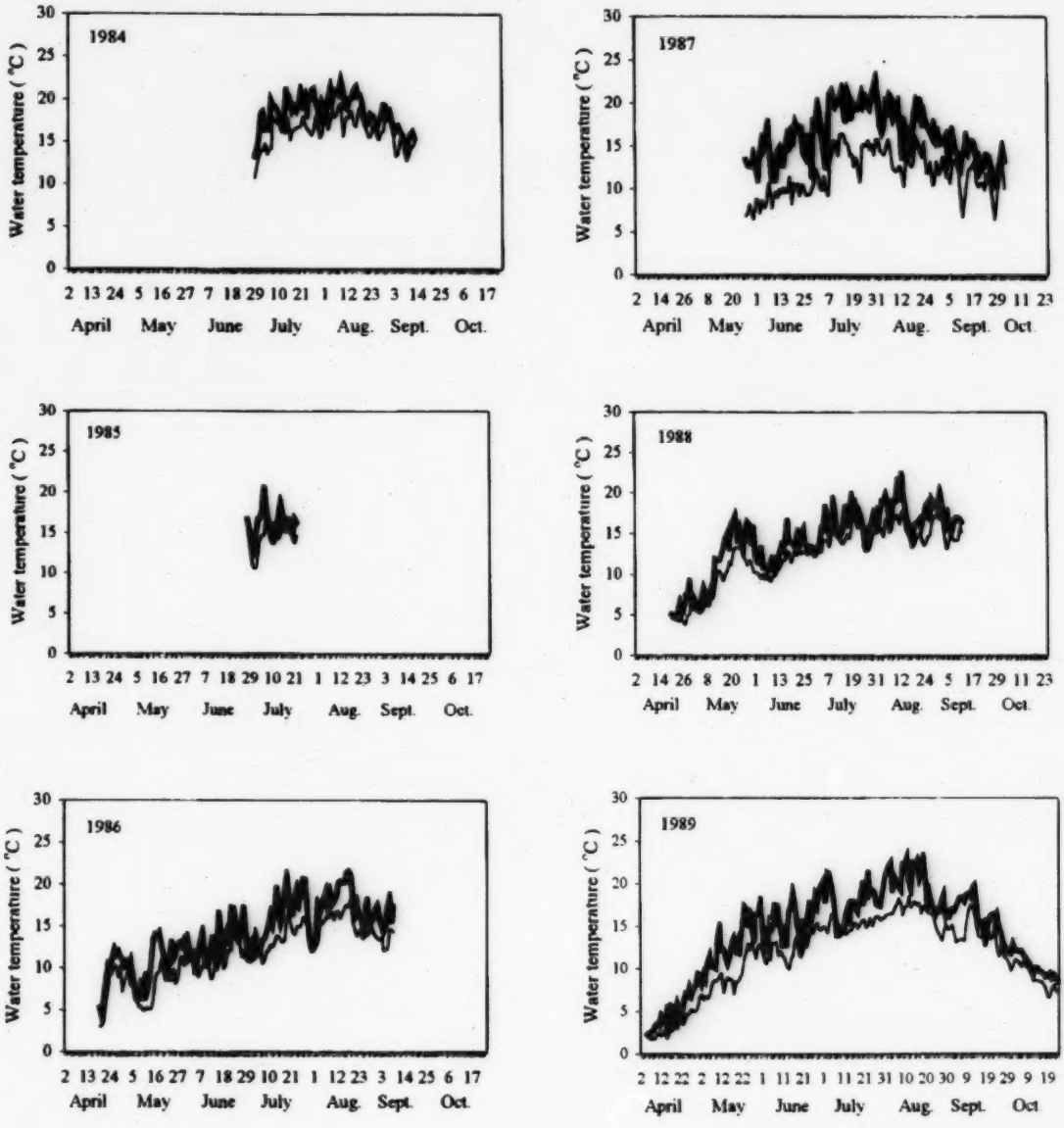

Fig. 23. Maximum and minimum water temperatures (°C) measured at the counting fence in Northeast Brook, Trepassey, 1984-2000.

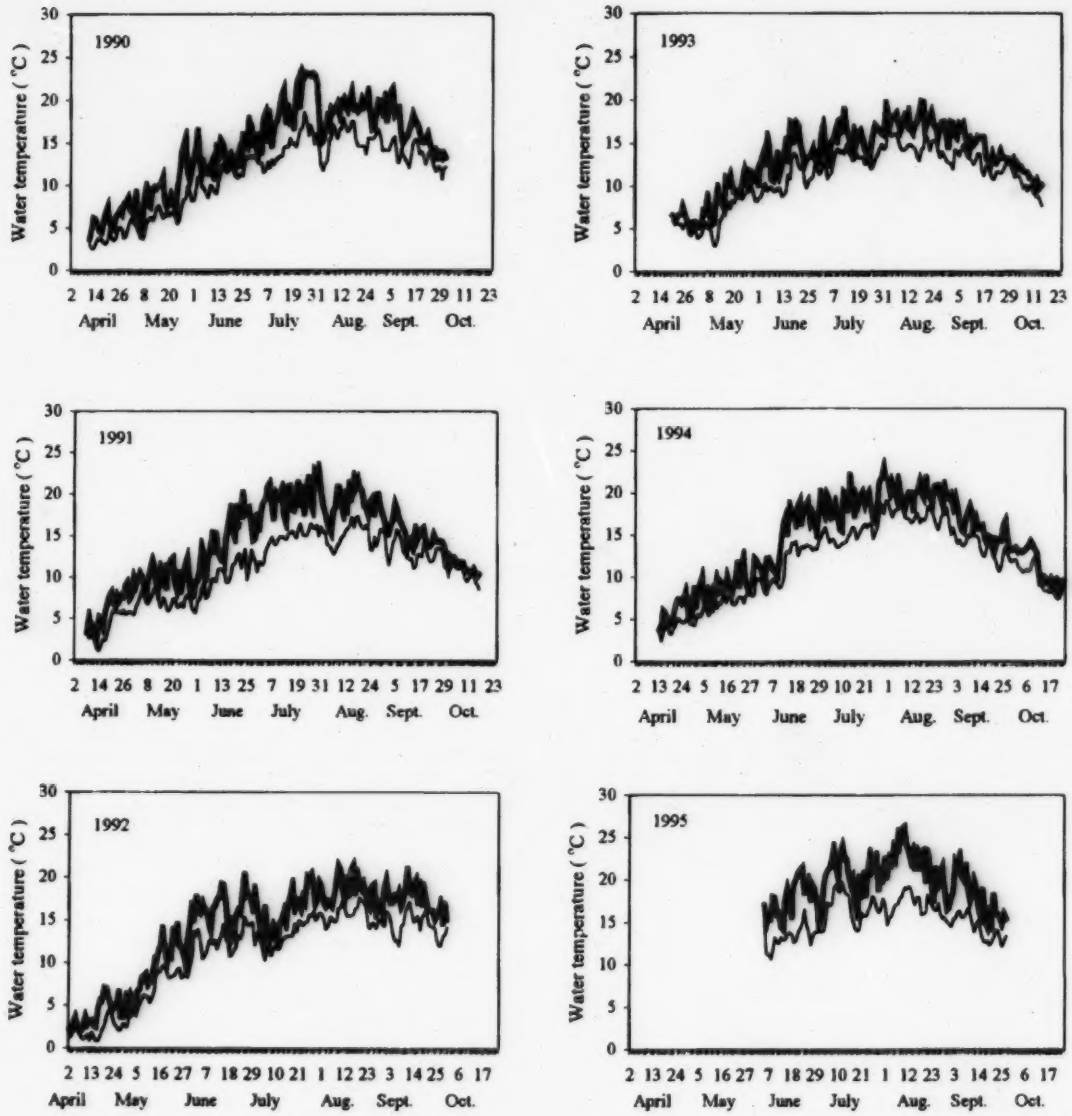
1990
1993
1991
1994
1992
1995
Water temperature (°C)
0 5 10 15 20 25 30
2 14 26 8 20 1 13 25 7 19 31 12 24 5 17 29 11 23
April May June July Aug. Sept. Oct.
2 13 24 5 16 27 7 18 29 10 21 1 12 23 3 14 25 6 17
April May June July Aug. Sept. Oct.

Fig. 23 (cont'd)

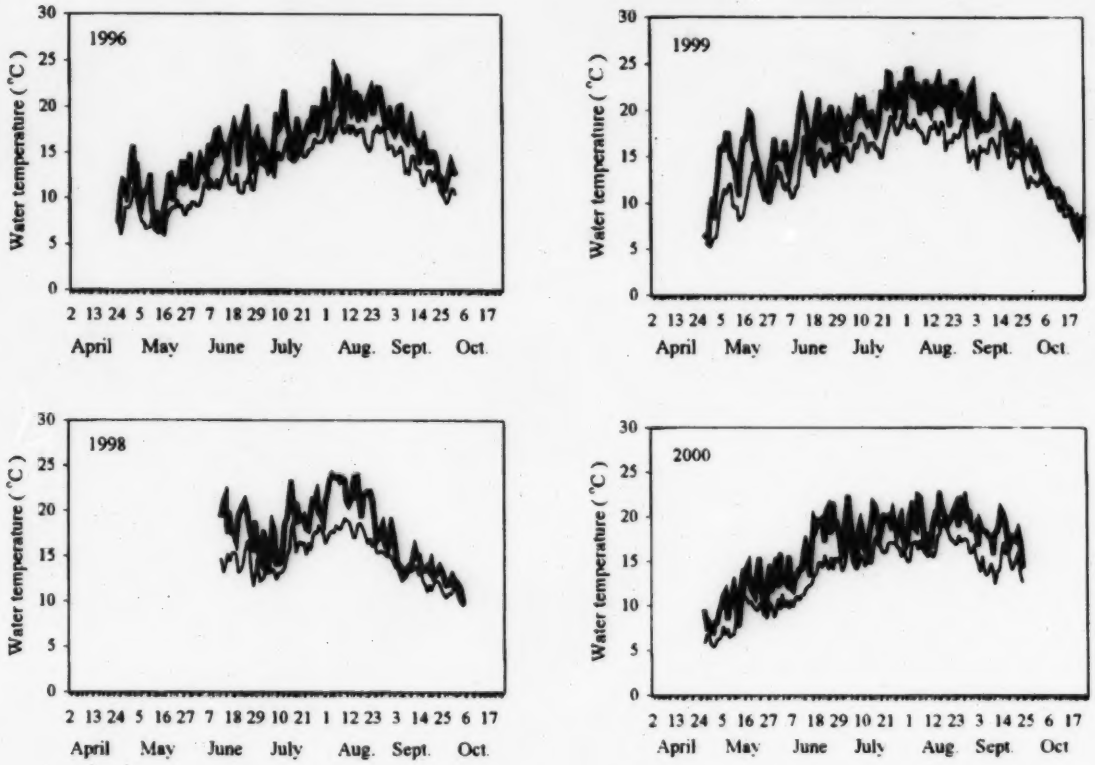
1996
1999
1998
2000
Water temperature (°C)
0
5
10
15
20
25
30
2 13 24 5 16 27 7 18 29 10 21 1 12 23 3 14 25 6 17
April May June July Aug. Sept. Oct.

Fig. 23 (cont'd)

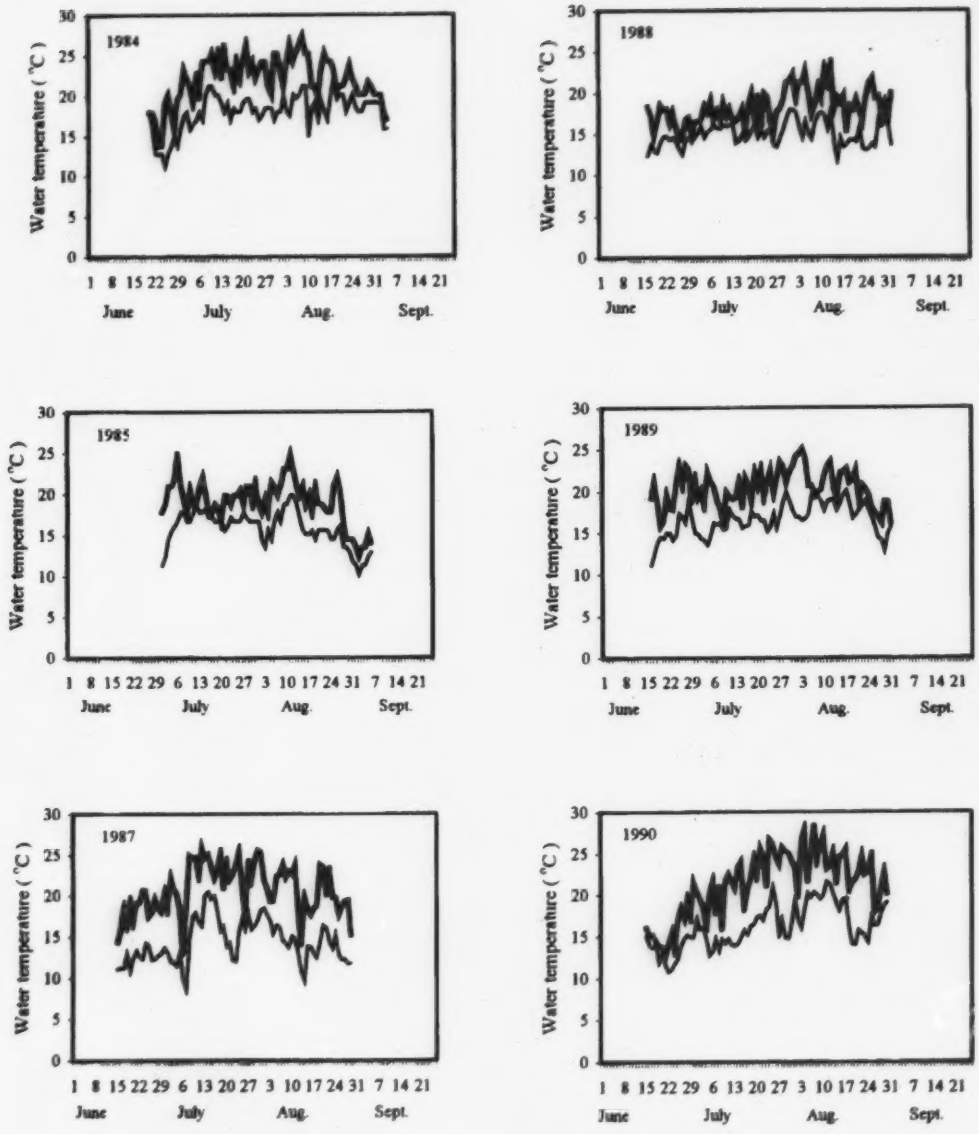

Fig. 24. Maximum and minimum water temperatures (°C) measured at the fishway in Northeast River, Placentia, 1985-2000.

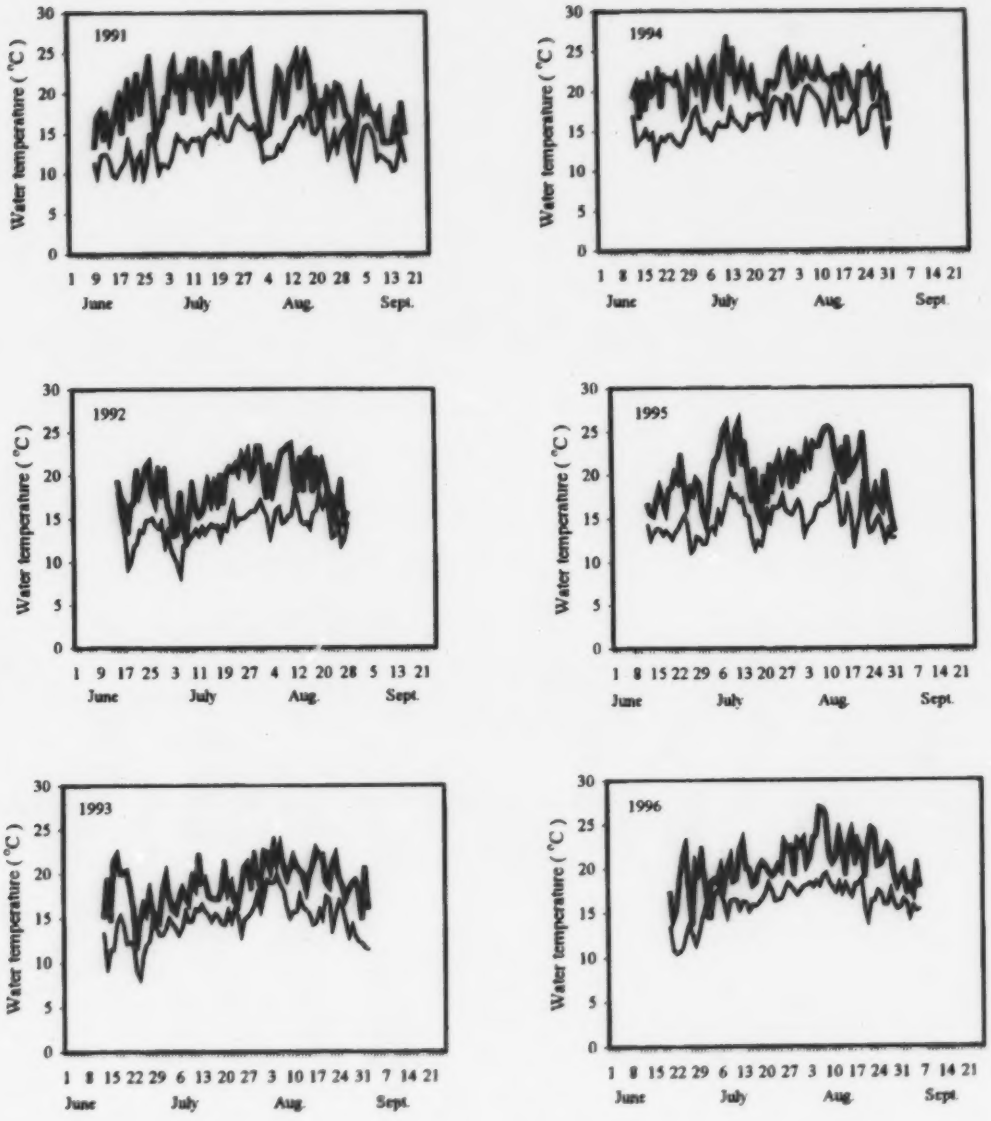
1991
1994
1992
1995
1993
1996
Water temperature (°C)
0 5 10 15 20 25 30
1 9 17 25 3 11 19 27 4 12 20 28 5 13 21
1 8 15 22 29 6 13 20 27 3 10 17 24 31 7 14 21
June
July
Aug.
Sept.

Fig. 24 (cont'd)

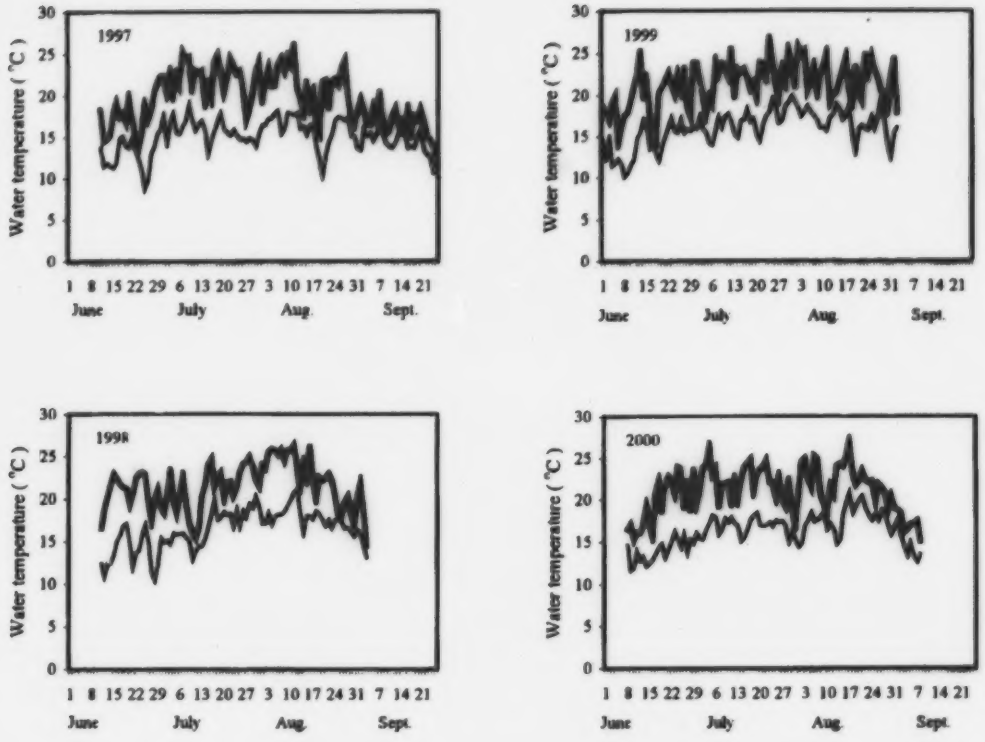
1997
1999
1998
2000
Water temperature (°C)
0
5
10
15
20
25
30
1 8 15 22 29 6 13 20 27 3 10 17 24 31 7 14 21
June
July
Aug.
Sept.

Fig. 24 (cont'd)

MIDDLE BROOK
SFA 5

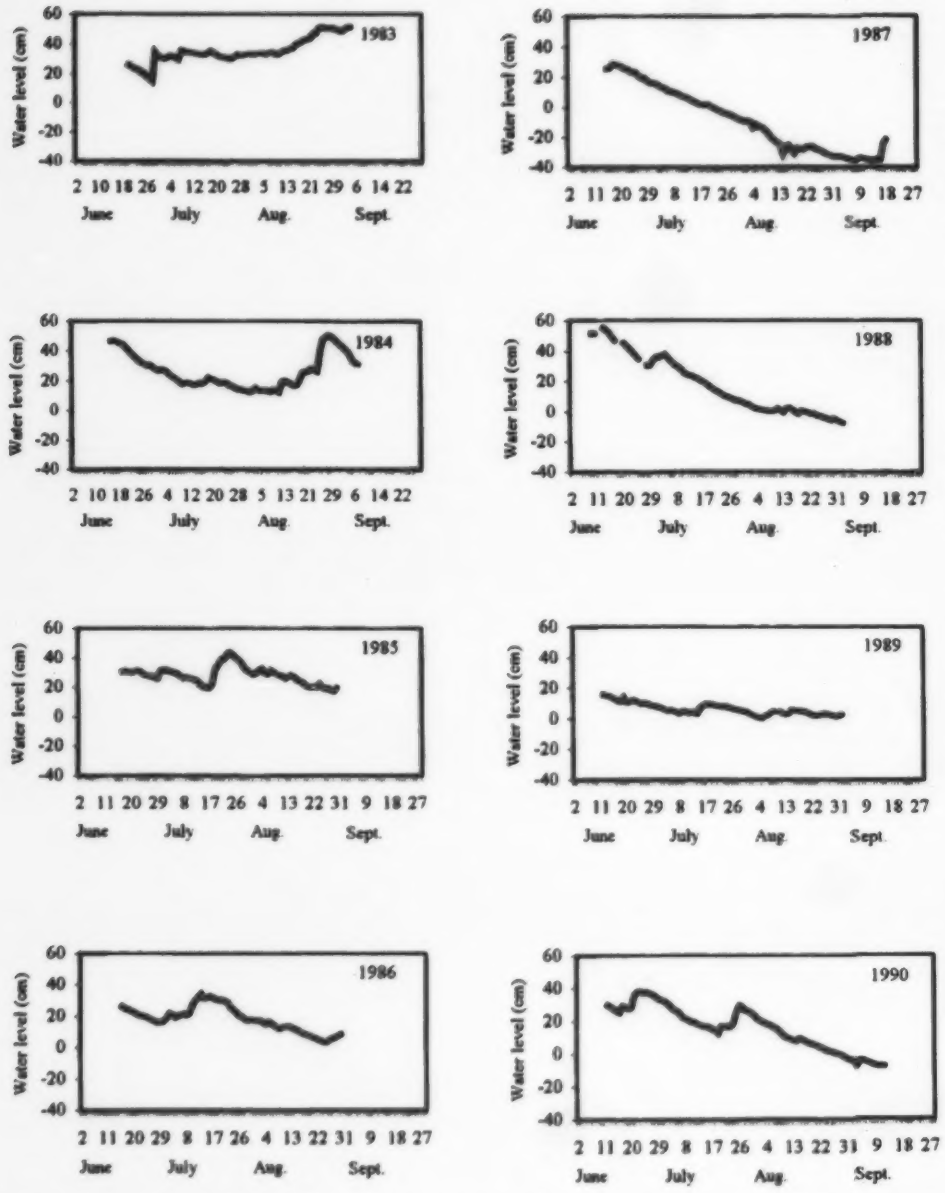

Fig. 25. Mean daily water levels (cm) measured near the fishway in Middle Brook, 1983-2000.

MIDDLE BROOK
SFA 5

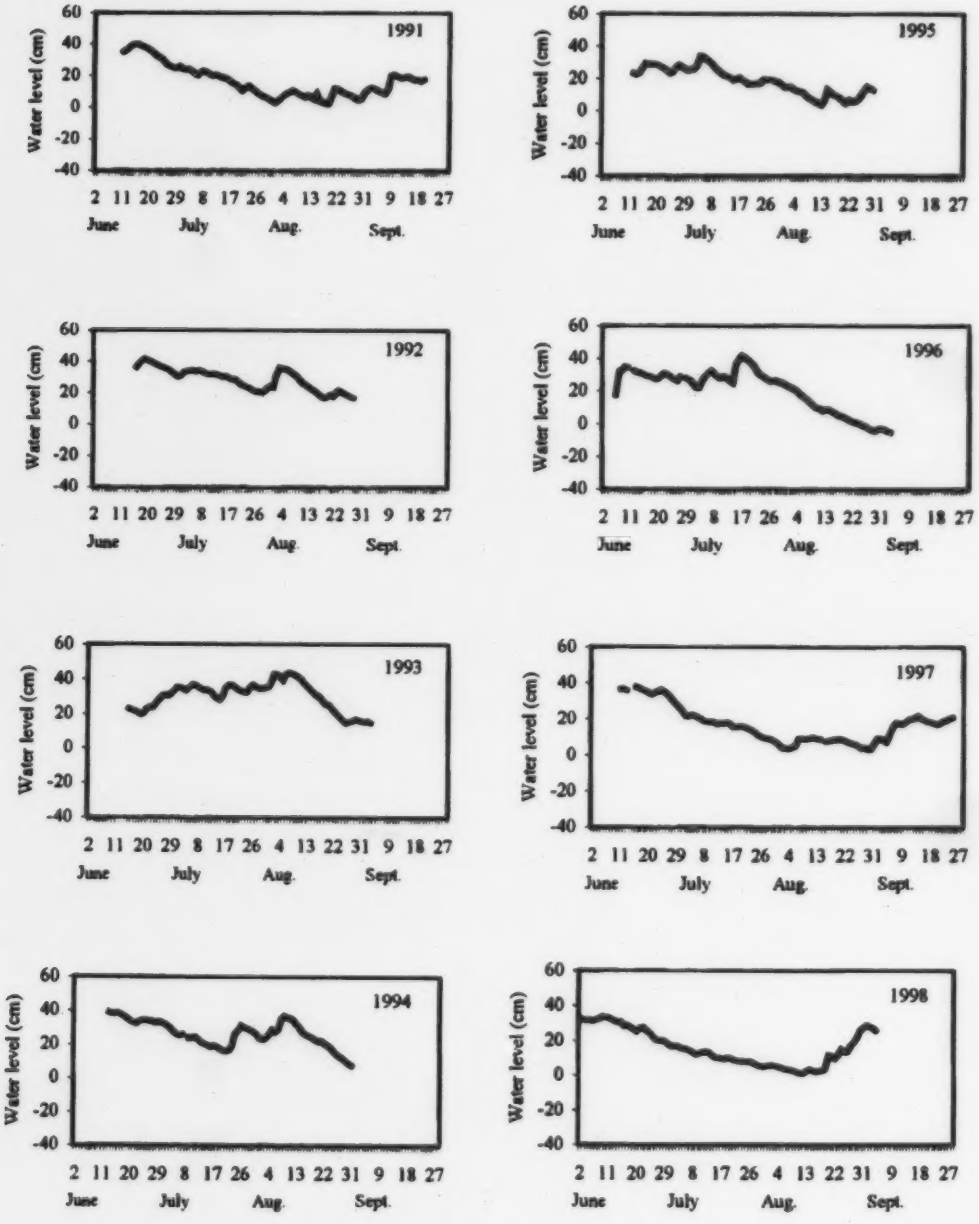

Fig. 25 (cont'd)

MIDDLE BROOK
SFA 5

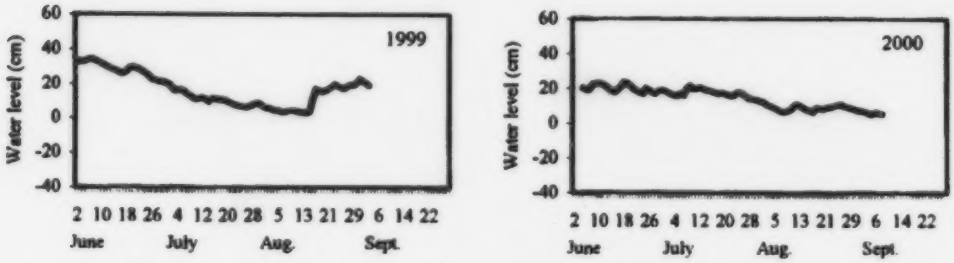

Fig. 25 (cont'd)

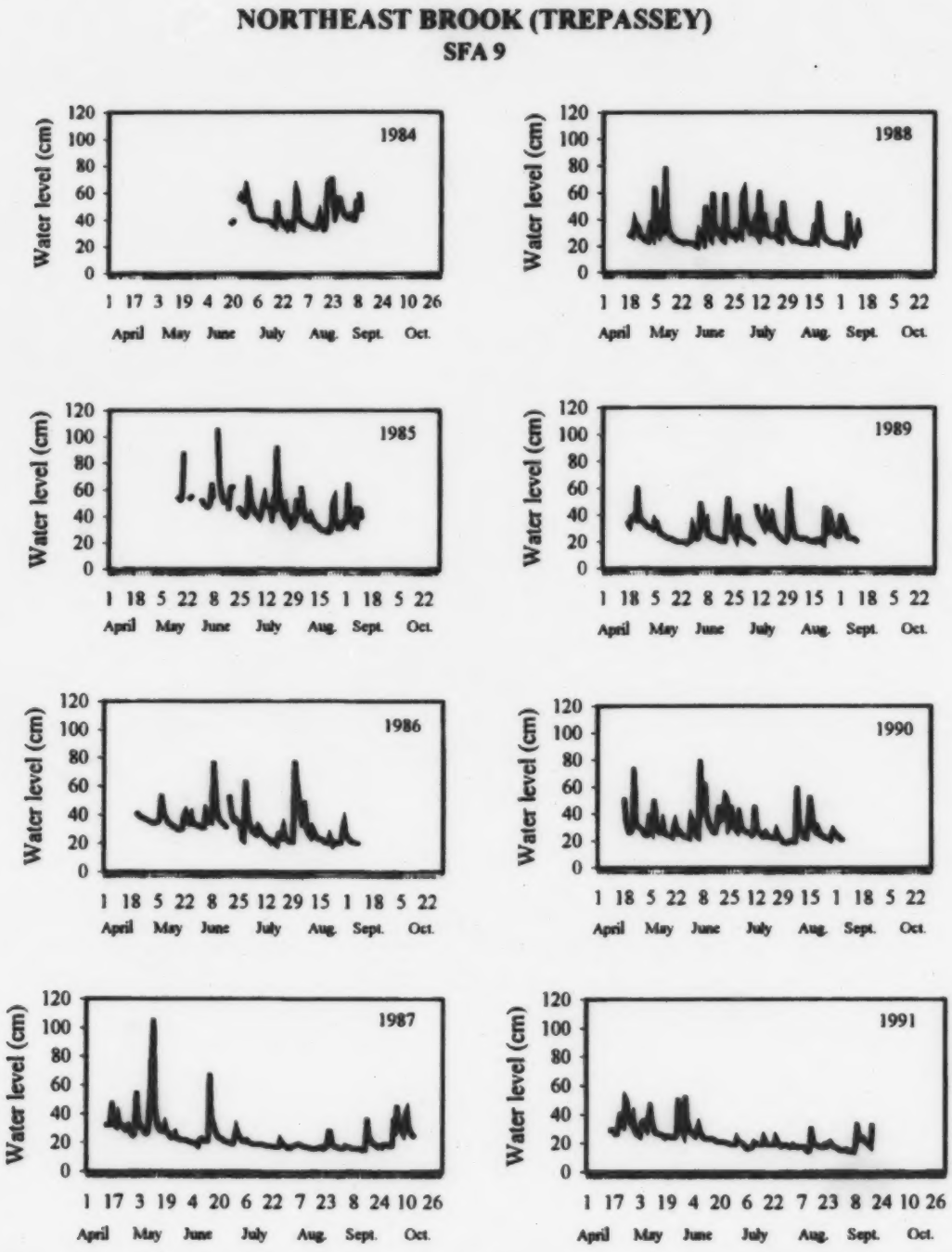

Fig. 26. Mean daily water levels (cm) measured near the counting fence in Northeast Brook (Trepassey), 1984-2000.

NORTHEAST BROOK (TREPASSEY)
SFA 9

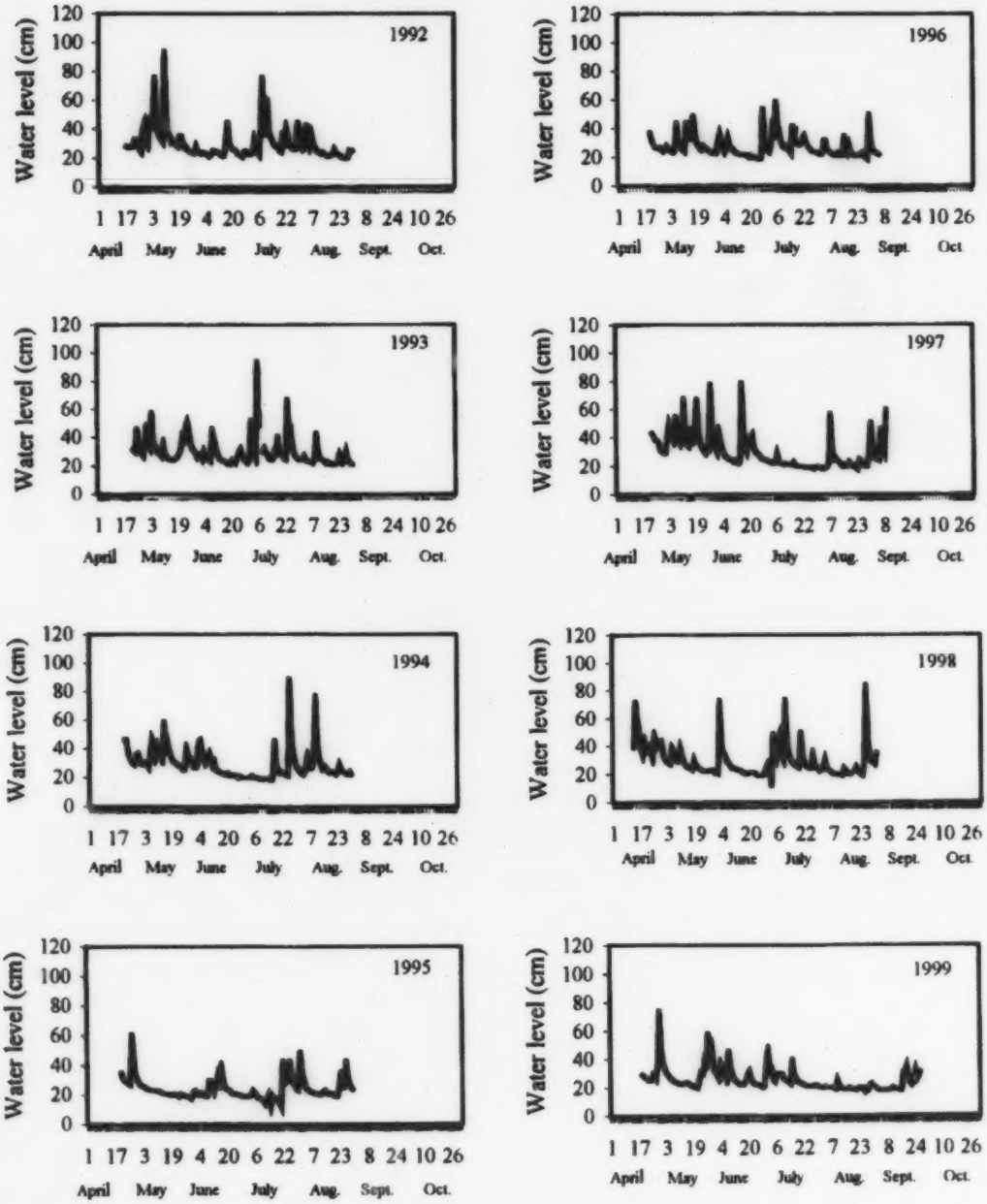

Fig. 26 (cont'd)

NORTHEAST BROOK (TREPASSEY)
SFA 9

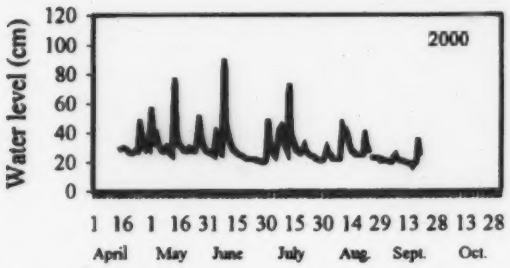

Fig. 26 (cont'd)

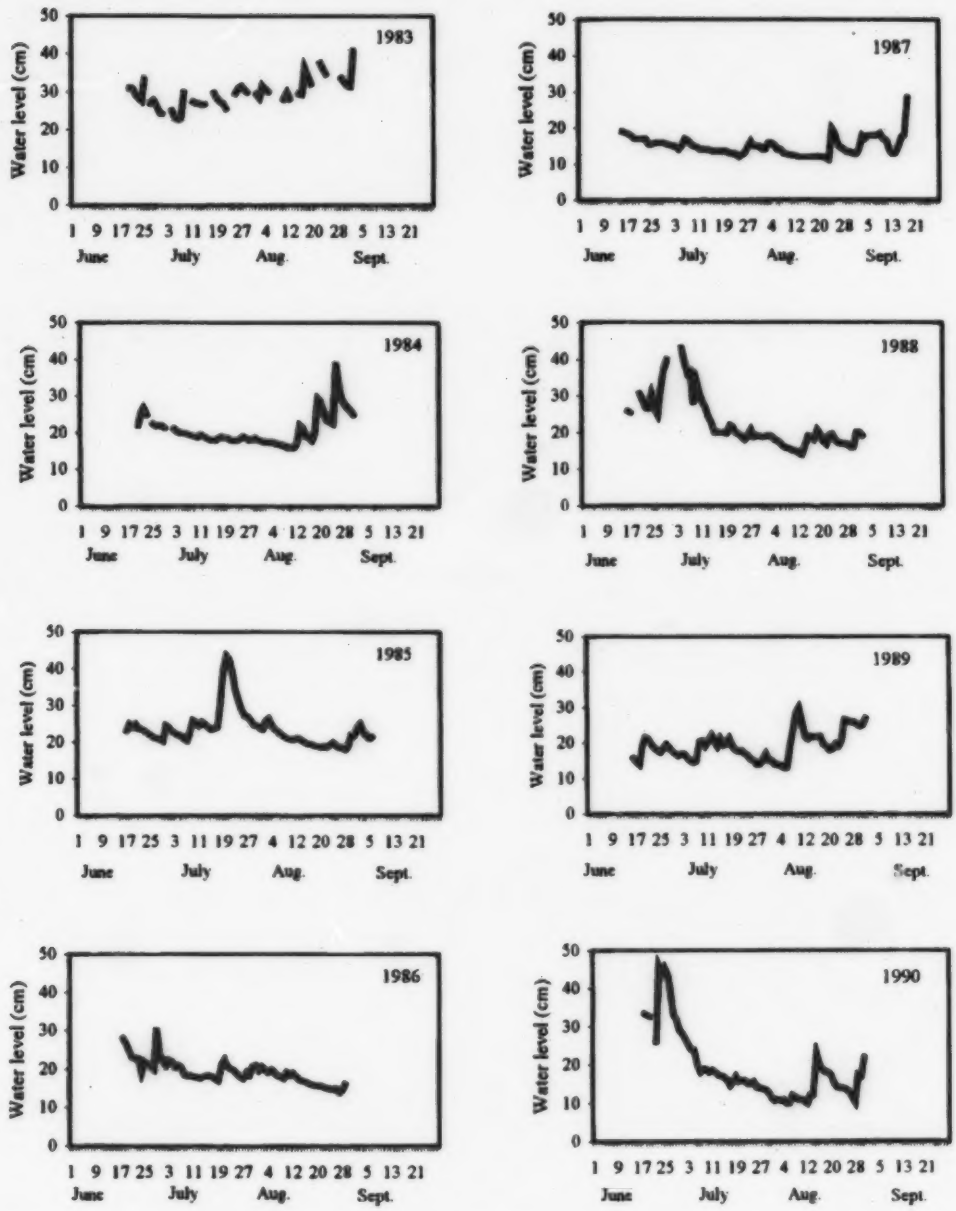

Fig. 27. Mean daily water levels (cm) measured near the fishway in Northeast River (Placentia), 1983-2000.

NORTHEAST RIVER (PLACENTIA)
SFA 10

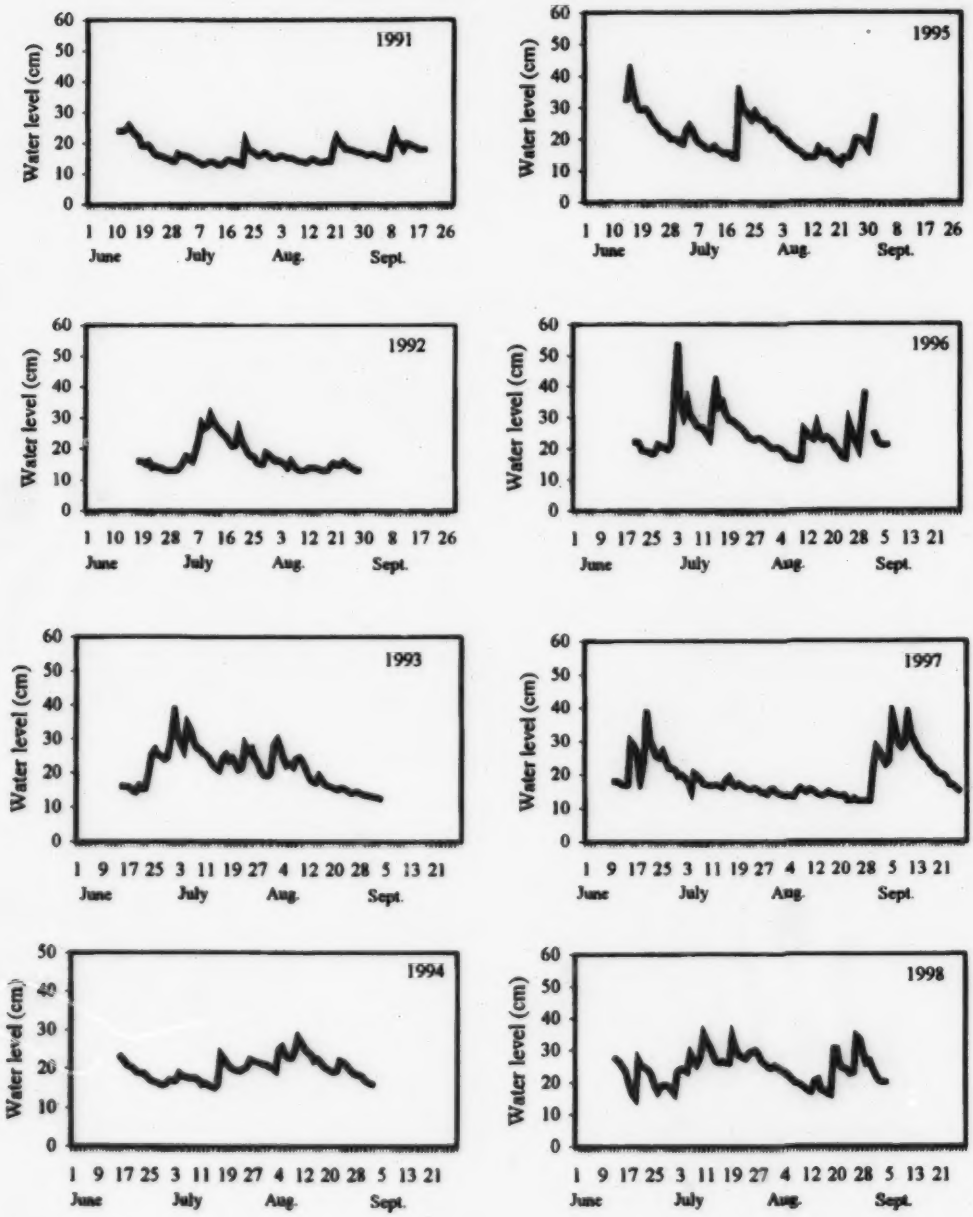

Fig. 27 (cont'd)

NORTHEAST RIVER (PLACENTIA)

SFA 10

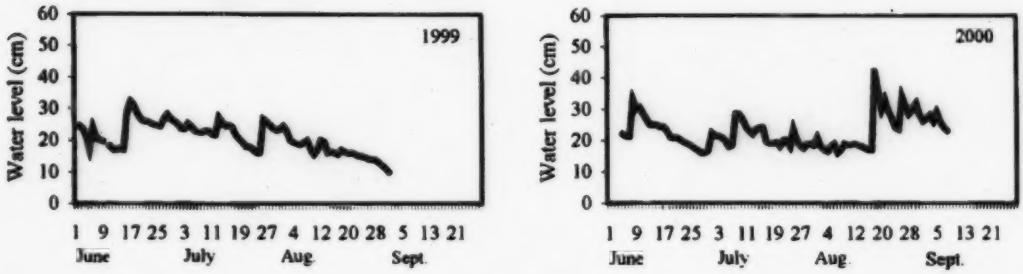

Fig. 27 (cont'd)

Appendix 1. Atlantic salmon recreational fishery catch and effort data for Middle Brook, Bonavista Bay (SFA 5), 1974-2000. Ret. = retained fish; Rel. = released fish.

	Effort	Small (<63 cm)			Large (>=63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1974	1823	277	.	277	11	.	11	288	.	288	0.16
1975	1635	415	.	415	8	.	8	423	.	423	0.26
1976	1339	280	.	280	2	.	2	282	.	282	0.21
1977	1511	767	.	767	3	.	3	770	.	770	0.51
1978	1322	391	.	391	1	.	1	392	.	392	0.30
1979	211	28	.	28	0	.	0	28	.	28	0.13
1980	1358	542	.	542	2	.	2	544	.	544	0.40
1981	1574	587	.	587	0	.	0	587	.	587	0.37
1982	2481	504	.	504	8	.	8	512	.	512	0.21
1983	1505	372	.	372	20	.	20	392	.	392	0.26
1984	2712	410	.	410	0	.	0	410	.	410	0.15
1985	2319	538	.	538	*	.	0	538	.	538	0.23
1986	2307	789	.	789	*	.	0	789	.	789	0.34
1987	840	187	.	187	*	.	0	187	.	187	0.22
1988	1545	708	.	708	*	.	0	708	.	708	0.46
1989	712	165	.	165	*	.	0	165	.	165	0.23
1990	949	349	.	349	*	.	0	349	.	349	0.37
1991	903	278	.	278	*	.	0	278	.	278	0.31
1992	1584	423	17	440	*	0	0	423	17	440	0.28
1993	1327	299	387	686	*	37	37	299	424	723	0.54
1994	2049	409	122	531	*	0	0	409	122	531	0.26
1995	2657	402	82	484	*	0	0	402	82	484	0.18
1996	2481	476	153	629	*	0	0	476	153	629	0.25
1997**	1821	77	10	87	*	1	1	77	11	88	0.05
1998**		188	154	342	*	17	17	188	171	359	
1999**		183	57	240	*	16	16	183	73	256	
2000**		98	32	130	*	7	7	98	39	137	
84-89 $\bar{X}$	1919.0	522.0	.	522.0	.	.	.	522.0	.	522.0	0.27
95% CL	988.5	308.0	.	308.0	.	.	.	308.0	.	308.0	0.15
N	5	5	0	5	0	0	0	5	0	5	5
86-91 $\bar{X}$	1283.2	457.8	.	457.8	.	.	.	457.8	.	457.8	0.36
95% CL	809.1	341.2	.	341.2	.	.	.	341.2	.	341.2	0.09
N	5	5	0	5	0	0	0	5	0	5	5
92-97 $\bar{X}$	1986.5	347.7	128.5	476.2	.	6.3	6.3	347.7	134.8	482.5	0.24
95% CL	539.8	151.7	145.5	221.8	.	15.8	15.8	151.7	160.0	229.5	0.13
N	6	6	6	6	0	6	6	6	6	6	6
98-99 $\bar{X}$		185.5	105.5	291.0	.	16.5	16.5	185.5	122.0	307.5	
95% CL		31.8	616.2	648.0	.	6.4	6.4	31.8	622.6	654.4	
N		2	2	2	0	2	2	2	2	2	

1987 DATA NOT INCLUDED IN MEAN

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR

CPUE IS BASED ON RETAINED + RELEASED FISH FOR 1992 - 1997 AND ON RETAINED FISH ONLY PRIOR TO 1992

* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND

**1997 DATA WERE OBTAINED FROM A CREEL SURVEY, 1998-2000 DATA FROM THE LICENSE STUB RETURN. 2000 DATA ARE PRELIMINARY

Appendix 2. Atlantic salmon recreational fishery catch and effort data for Northeast River, Placentia Bay (SFA 10), 1974-2000. Ret. = retained fish; Rel. = released fish.

	Effort	Small (<63 cm)			Large (>=63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1974	1721	142	.	142	0	.	0	142	.	142	0.08
1975	877	121	.	121	4	.	4	125	.	125	0.14
1976	1164	147	.	147	1	.	1	148	.	148	0.13
1977	1465	180	.	180	1	.	1	181	.	181	0.12
1978	1237	161	.	161	0	.	0	161	.	161	0.13
1979	969	138	.	138	0	.	0	138	.	138	0.14
1980	1612	246	.	246	6	.	6	252	.	252	0.16
1981	2339	349	.	349	0	.	0	349	.	349	0.15
1982	1303	150	.	150	0	.	0	150	.	150	0.12
1983	2037	165	.	165	0	.	0	165	.	165	0.08
1984	988	70	.	70	0	.	0	70	.	70	0.07
1985	1276	173	.	173	*	.	0	173	.	173	0.14
1986	862	234	.	234	*	.	0	234	.	234	0.27
1987	349	36	.	36	*	.	0	36	.	36	0.10
1988	772	186	.	186	*	.	0	186	.	186	0.24
1989	852	210	.	210	*	.	0	210	.	210	0.25
1990	786	173	.	173	*	.	0	173	.	173	0.22
1991	153	19	.	19	*	.	0	19	.	19	0.12
1992	485	37	189	226	*	0	0	37	189	226	0.47
1993	592	132	61	193	*	0	0	132	61	193	0.33
1994	313	39	5	44	*	0	0	39	5	44	0.14
1995	544	127	8	135	*	0	0	127	8	135	0.25
1996	2883	268	7	275	*	0	0	268	7	275	0.10
1997**		95	45	140	*	33	33	95	78	173	
1998**		201	102	303	*	23	23	201	125	326	
1999**		67	26	93	*	8	8	67	34	101	
2000**		60	18	78	*	7	7	60	25	85	
84-89 $\bar{X}$	950.0	174.6	.	174.6	.	.	.	174.6	.	174.6	0.18
95% CL	245.8	78.2	.	78.2	.	.	.	78.2	.	78.2	0.11
N	5	5	0	5	0	0	0	5	0	5	5
86-91 $\bar{X}$	685.0	164.4	.	164.4	.	.	.	164.4	.	164.4	0.24
95% CL	372.4	105.0	.	105.0	.	.	.	105.0	.	105.0	0.03
N	5	5	0	5	0	0	0	5	0	5	5
92-96 $\bar{X}$	963.4	120.6	54.0	174.6	.	0.0	0.0	120.6	54.0	174.6	0.18
95% CL	1338.6	117.0	98.1	110.5	.	0.0	0.0	117.0	98.1	110.5	0.19
N	5	5	5	5	0	5	5	5	5	5	5
97-99 $\bar{X}$		121.0	57.7	178.7	.	21.3	21.3	121.0	79.0	200.0	
95% CL		175.6	98.3	273.8	.	31.3	31.3	175.6	113.1	285.5	
N		3	3	3	0	3	3	3	3	3	

1987 DATA NOT INCLUDED IN MEAN

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR

CPUE IS BASED ON RETAINED + RELEASED FISH FOR 1992 - 1996 AND ON RETAINED FISH ONLY PRIOR TO 1992

* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND

**DATA OBTAINED FROM THE LICENSE STUB RETURN (2000 DATA ARE PRELIMINARY)

Appendix 3a. Maximum and minimum water temperatures (°C) measured at the fishway in Middle Brook for the month of June, 1985-2000.

Year		Date																											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1985	Max.																		16.1	15.6	14.0	14.0	13.0	16.1	15.1	17.1	16.1	18.1	20.2	19.1	16.6
	Min.																		13.0	13.0	12.0	13.5	12.5	12.0	12.0	13.0	12.0	12.0	13.0	17.1	13.0
1986	Max.																	15.7	17.7	17.6	14.7	18.1	19.0	19.4	19.2	18.7	18.3	15.2	19.9	15.7	18.3
	Min.																	15.4	12.8	12.1	12.8	11.6	12.4	14.7	15.9	15.4	14.6	13.7	13.2	13.5	14.1
1987	Max.											14.4	15.9	14.8	17.5	14.6	14.9	16.8	17.8	16.7	15.2	16.6	19.1	19.8	18.6	15.7	16.0	17.4	19.6	20.4	19.6
	Min.											14.4	12.6	13.6	12.8	11.9	12.8	13.2	13.1	13.5	13.9	13.3	13.5	14.3	14.9	13.8	13.1	13.1	13.9	14.9	17.5
1988	Max.									10.9	10.8	11.2	13.2	13.0	13.4	11.3	16.5	15.9	12.7	17.0	18.5	17.2	17.1	16.0	17.1	17.0	14.6	16.5	20.0	19.1	17.6
	Min.									9.9	10.0	9.3	10.1	11.3	11.0	9.7	10.8	12.7	11.7	12.3	14.4	15.4	15.0	14.1	14.8	14.3	12.6	12.4	15.9	17.0	15.4
1989	Max.												12.3	12.8	12.2	17.7	19.3	21.8	16.7	19.6	19.6	16.2	16.1	17.3	19.6	22.4	17.3	19.0	23.0	23.2	21.5
	Min.												11.3	10.0	10.0	10.2	12.3	14.0	14.3	15.1	16.2	15.0	14.3	14.3	14.6	15.0	15.3	15.2	16.5	17.6	17.1
1990	Max.										10.1	10.2	10.1	15.1	16.3	9.6	10.1	22.2	16.1	12.9	12.9	16.1	16.2	16.6	16.6	20.2	20.1	16.3	16.3	17.9	17.6
	Min.										10.0	10.0	8.2	8.2	9.7	7.8	5.8	5.2	10.4	10.3	10.4	10.3	10.7	10.7	14.7	14.7	15.2	15.1	14.6	14.6	15.9
1991	Max.										13.8	12.6	9.3	11.9	11.0	11.6	14.6	15.5	14.0	15.8	15.9	14.1	16.1	18.0	16.5	17.0	18.2	17.4	16.1	13.9	16.4
	Min.										10.9	9.5	8.6	8.7	9.1	10.2	10.1	10.8	11.4	11.2	13.6	12.9	12.2	13.4	11.1	10.5	11.6	12.1	13.1	13.3	11.8
1992	Max.																	15.0	15.9	14.4	16.1	17.3	15.9	16.1	17.2	17.9	16.4	15.9	15.4	14.9	14.8
	Min.																	13.9	12.3	12.6	12.8	12.6	13.1	14.1	14.2	14.4	14.6	13.9	14.1	13.6	12.4
1993	Max.														14.1	17.8	19.0	19.5	18.9	15.1	16.0	17.1	12.9	10.6	14.9	14.1	12.4	14.2	16.1	15.3	14.7
	Min.														11.6	10.8	12.6	11.7	15.1	11.9	11.0	11.9	10.6	9.5	9.3	11.9	10.9	10.6	12.6	13.1	11.7
1994	Max.														13.3	17.5	17.0	19.1	18.8	18.4	19.2	17.1	18.1	18.9	16.5	17.8	18.9	19.0	20.0	21.0	21.8
	Min.														12.6	12.7	15.0	13.8	13.8	12.4	13.9	14.4	13.2	16.2	14.9	14.1	13.6	14.1	14.3	16.7	17.9
1995	Max.														14.7	15.3	15.3	17.7	16.8	16.5	15.5	17.8	17.9	19.9	15.9	13.9	16.0	14.3	15.3	13.8	12.8
	Min.														13.8	12.3	12.6	12.7	14.1	13.4	12.2	12.8	13.6	14.4	13.1	12.4	10.9	12.6	12.4	11.9	11.6
1996	Max.					16.4	16.5	17.6	17.0	16.0	17.2	15.2	16.9	15.1	18.6	20.0	18.4	15.6	17.0	16.1	14.8	12.4	12.2	15.4	17.5	18.0	15.3	14.4	15.1	18.8	20.6
	Min.					15.7	13.8	14.0	13.9	13.0	12.0	13.3	11.8	12.9	13.2	15.4	13.9	12.1	12.9	13.2	11.8	10.9	10.6	10.4	11.1	11.6	12.4	11.5	12.1	12.8	14.5
1997	Max.									19.3	12.3	13.0	11.8	11.8	15.0	17.0	17.2	16.5	17.9	20.3	20.9	17.8	16.9	14.8	17.5	18.3	17.8	19.0	19.2	20.0	20.5
	Min.									9.8	10.4	9.4	9.4	9.0	11.3	12.2	13.0	13.9	15.1	15.1	15.1	13.9	14.9	13.1	12.3	12.9	14.7	13.1	14.6	14.5	14.5
1998	Max.	14.9	15.8	12.4	14.0	12.9																									
	Min.	11.0	10.9	10.1	9.3	10.3																									
1999	Max.	16.0	15.3	15.0	16.0	18.0	14.9	15.6	15.2	17.5	19.3	18.4	20.0	21.9	23.2	23.9	19.6	19.1	17.4	21.9	22.5	20.0	22.4	23.8	21.0	23.1	24.4	23.4	20.4	19.5	24.4
	Min.	13.8	13.0	13.1	11.9	12.4	13.6	12.1	11.3	11.1	13.7	14.9	13.1	16.2	16.9	18.6	17.1	16.5	15.5	14.1	16.6	17.4	15.0	17.7	16.2	16.3	18.3	17.4	17.4	16.6	17.1
2000	Max.						16.9	14.4	15.4	14.3	14.5	14.5	16.3	14.1	16.4	15.1	14.7	21.3	22.4	19.0	21.5	20.0	18.4	19.5	21.5	23.0	21.3	19.5	17.8	20.8	19.2
	Min.						15.0	10.5	11.0	10.8	10.3	8.9	10.6	10.9	10.6	11.6	12.6	13.1	16.7	13.1	14.6	13.4	12.9	15.1	16.5	16.0	17.7	16.5	15.5	15.4	15.9

Appendix 3b. Maximum and minimum water temperatures (°C) measured at the fishway in Middle Brook for the month of July, 1985-2000.

Year		Date																												
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1985	Max.	18.1	19.1	19.1	19.1	19.1	21.2	23.2	21.2	20.7	22.2	22.2	21.2	22.2	22.2	22.2	18.6	19.6	18.1	17.1												
	Min.	16.1	15.6	14.0	17.1	17.1	17.1	19.1	19.1	18.1	19.1	20.2	19.1	19.1	19.1	18.1	18.1	17.6	17.1	16.1												
1986	Max.	16.1	17.0	18.1	15.5	15.4	14.4	16.6	16.5	16.3	18.1	17.7	15.2	15.1	18.9	15.8	14.2	16.1	19.0	19.9	16.7	17.8	20.3	20.4	19.6	19.9	20.6	21.2	21.4	15.2	15.3	19.2
	Min.	14.0	12.7	14.0	13.4	13.1	13.5	12.7	13.2	13.8	13.5	14.7	13.7	13.1	13.0	14.0	13.2	13.1	14.3	14.8	15.2	15.4	16.8	15.9	15.8	16.2	18.0	17.1	16.0	14.2	14.0	13.7
1987	Max.	22.4	19.1	20.8	22.2	20.8	20.3	21.6	22.6	24.5	26.2	23.4	21.7	25.9	25.7	26.5	26.1	26.4	26.3	24.8	24.1	24.1	23.8	25.0	26.4	24.7	25.9	23.5	23.3	25.0	25.6	26.0
	Min.	17.3	17.0	14.7	17.4	17.2	14.8	14.5	16.9	18.3	20.1	19.6	19.9	23.1	22.9	25.3	25.7	23.3	20.9	21.0	19.6	17.8	18.0	17.5	19.4	21.3	20.4	20.1	19.1	18.8	19.3	20.6
1988	Max.	18.6	17.5	17.0	19.7	20.9	19.5	18.6	18.7	20.4	22.6	20.4	20.8	20.1	19.4	19.0	20.4	19.2	22.2	22.7	20.9	21.3	19.9	22.5	22.3	20.5	20.8	21.6	23.0	23.3	25.1	23.5
	Min.	15.1	15.2	15.8	15.3	16.7	17.5	16.3	15.6	17.5	18.9	17.9	17.1	18.3	16.2	16.0	16.3	16.6	16.5	18.3	17.9	16.8	18.3	17.4	17.6	18.0	17.1	16.5	17.5	19.9	19.8	21.1
1989	Max.	18.8	20.1	21.4	20.8	18.7	20.6	21.9	24.0	17.4	22.9	20.9	21.2	20.1	20.4	16.6	23.1	23.4	24.5	22.6	23.3	22.2	19.6	21.2	23.2	20.9	23.3	25.5	25.4	23.2	24.3	24.0
	Min.	14.8	14.6	14.8	14.8	16.2	16.4	17.4	17.8	15.8	15.7	17.8	17.0	16.6	14.9	14.1	15.2	17.5	17.1	17.6	17.9	17.9	16.2	16.6	16.8	18.0	18.3	19.4	20.4	18.8	18.8	18.2
1990	Max.	20.1	19.5	18.2	18.0	13.9	13.8	14.2	14.1	13.8	13.7	16.1	15.8	15.8	14.7	15.0	15.4	18.9	19.0	20.9	20.6	20.5	20.2	21.0	20.4	20.9	20.5	19.6	19.2	18.8	18.8	19.4
	Min.	15.7	16.8	16.7	14.0	13.6	13.1	13.0	13.6	13.4	13.1	13.0	12.8	12.6	12.7	12.6	14.6	14.8	16.5	16.4	18.5	18.1	18.2	17.9	17.7	17.6	17.9	18.0	16.7	16.8	15.6	15.5
1991	Max.	15.2	14.5	14.9	18.3	17.0	13.9	15.4	14.6	15.1	15.4	17.1	19.3	17.5	16.1	20.6	20.6	19.1	19.6	22.1	23.5	21.0	20.2	19.6	22.5	23.0	20.5	21.0	24.0	24.4	26.0	23.5
	Min.	12.9	12.9	12.4	12.3	14.4	12.1	11.8	13.1	13.3	13.6	13.9	13.9	13.5	14.6	14.4	16.5	16.5	14.4	15.4	17.8	17.5	15.6	15.9	16.5	16.4	18.0	17.6	17.9	17.0	18.9	18.9
1992	Max.	14.3	13.4	12.1	11.3	14.1	13.3	12.7	15.3	17.0	16.2	15.4	14.9	17.1	17.5	19.0	16.4	14.9	16.5	16.5	19.8	18.9	19.1	19.0	21.0	21.3	20.5	19.0	19.8	19.6	21.0	20.3
	Min.	12.9	12.3	11.3	10.6	10.2	11.6	11.6	12.0	13.6	13.3	12.7	13.1	12.3	13.1	14.3	13.1	12.9	12.6	14.1	14.4	13.9	15.1	15.1	16.1	15.6	17.4	17.6	15.5	15.4	16.7	17.7
1993	Max.	17.8	18.4	18.4	15.3	15.1	14.9	17.5	15.8	14.5	16.2	16.6	19.5	17.1	17.0	16.6	16.5	15.2	14.9	15.6	17.5	15.1	18.9	18.4	15.2	16.8	18.0	18.7	17.0	18.2	18.0	20.6
	Min.	12.4	13.8	14.9	13.3	13.6	13.3	13.6	13.7	13.1	12.6	14.1	14.3	13.8	14.3	13.4	13.1	14.3	13.9	13.6	14.0	13.9	14.0	15.1	13.8	13.1	14.1	14.8	15.6	15.8	16.8	17.5
1994	Max.	21.7	22.5	22.5	21.4	19.1	19.1	19.1	22.1	20.1	20.5	21.4	22.6																			
	Min.	17.3	18.6	18.5	17.5	17.5	10.9	10.9	16.4	17.3	16.9	17.0	17.0																			
1995	Max.	16.3	13.7	17.6	18.7	21.2	22.5	23.9	22.5	22.3	22.0	23.3	23.8	23.0	22.4	20.8	16.3	19.9	17.4	19.1	21.0	19.7	22.1	21.1	23.3	22.5	21.3	22.6	23.3	20.9	20.8	21.3
	Min.	10.9	12.9	12.4	14.6	16.1	17.2	18.4	15.8	19.0	19.3	18.8	19.3	18.9	19.1	16.6	14.8	14.0	14.4	14.3	16.6	17.8	16.4	17.6	18.5	18.9	19.2	17.5	17.0	17.3	18.1	16.7
1996	Max.	21.8	22.5	20.0	21.0	19.9	21.1	19.9	19.8	20.5	18.2	21.9	21.8	22.9	21.4	19.8	18.5	21.4	21.2	20.2	19.2	20.5	19.5	19.3	19.0	21.2	21.8	21.0	20.0	19.6	22.4	23.8
	Min.	15.9	17.2	17.8	17.1	17.9	17.3	18.0	16.2	16.7	16.6	17.1	17.7	17.6	18.2	15.1	16.6	17.0	18.1	18.1	17.7	18.2	18.1	17.2	17.1	17.1	16.9	19.4	18.5	17.2	17.1	19.4
1997	Max.	22.0	19.0	19.0	19.4	22.3	22.8	23.8	22.8	23.4	23.1	22.3	20.9	22.7	19.6	20.1	19.3	20.0	23.5	23.3	20.3	20.8	20.9	22.5	23.1	21.3	19.8	18.0	23.4	20.5	23.8	24.3
	Min.	15.1	14.9	15.8	16.1	16.4	16.9	16.9	16.9	19.5	18.3	18.5	18.3	17.8	15.8	13.7	14.6	16.9	17.5	17.9	17.3	16.5	17.1	15.4	16.6	16.1	15.6	15.3	15.7	16.8	15.2	17.0
1998	Max.																															
	Min.																															
1999	Max.	24.2	23.5	20.2	19.9	18.1	16.6	22.7	21.0	20.8	19.5	21.9	25.0	20.5	23.8	25.2	25.3	25.2	22.8	23.9	20.5	24.4	22.1	22.4	23.8	24.9	24.0	20.6	20.8	23.2	23.5	25.9
	Min.	17.9	19.5	17.6	16.9	15.3	13.8	15.2	17.5	16.5	17.1	16.1	16.1	18.4	16.5	18.5	19.6	20.1	17.8	19.1	17.4	17.1	18.5	18.4	19.3	19.1	18.4	17.9	17.0	18.1	18.9	19.1
2000	Max.	19.1	21.0	23.0	22.5	23.0	21.0	22.5	22.1	22.5	23.5	20.9	22.3	19.8	22.0	24.7	26.1	25.6	22.1	22.2	24.1	21.5	21.5	20.0	22.1	20.5	23.0	23.5	24.8	25.1	22.8	23.1
	Min.	14.8	16.3	15.6	18.0	16.6	17.0	16.8	18.4	19.0	17.3	18.4	17.5	17.6	16.1	17.5	19.1	19.9	18.8	19.0	18.5	18.4	17.0	17.6	17.8	18.0	17.6	17.6	18.1	18.6	19.1	18.0

Appendix 3c. Maximum and minimum water temperatures (°C) measured at the fishway in Middle Brook for the month of August, 1985-2000.

Year		Date																													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1985	Max.																															
	Min.																															
1986	Max.	14.2	17.3	20.3	19.3	21.6	20.4	21.2	19.8	20.9	18.1	18.8	20.4	21.9	19.6																	
	Min.	14.0	15.2	16.7	17.9	16.8	16.3	17.4	17.6	17.7	16.4	16.5	16.4	18.5	18.7																	
1987	Max.	24.4	24.0	21.0	24.6	25.6	24.7	25.1	25.9	23.8	25.6	25.2	22.4	17.7	21.5	22.2	21.0	23.2	21.2	25.7	23.1	21.5	22.9	20.4	20.1	20.2	18.6	19.0	20.4	22.0	19.7	20.1
	Min.	20.6	19.1	18.8	16.8	19.7	19.1	17.8	18.3	18.5	18.9	18.2	18.0	14.8	13.0	16.8	17.6	17.8	17.5	18.0	19.1	18.5	17.3	17.6	16.8	14.2	14.4	13.7	13.4	14.5	15.5	15.3
1988	Max.	25.0	22.6	22.8	23.1	25.1	22.3	19.6	21.6	24.9	22.9	23.3	25.6	23.3	20.9	21.5	23.3	23.3	19.0	18.5	19.1	19.3	17.9	16.9	20.1	22.3	22.9	21.0	24.0	24.0	22.8	21.1
	Min.	20.4	18.9	18.6	17.6	18.7	17.5	17.7	19.3	19.8	19.8	18.5	19.0	20.3	17.4	15.0	16.7	17.7	15.7	15.8	14.9	14.1	15.8	13.4	13.7	15.9	16.0	16.5	18.3	19.5	20.1	18.0
1989	Max.	25.3	26.6	27.4	25.5	22.1	23.6	22.9	24.0	25.4	24.5	25.9	26.3	20.8	19.9	27.7	27.7	27.7	18.8	23.6	27.5	23.9	23.6	16.3	17.9	19.1	18.6	16.5	15.9	19.2	21.1	18.8
	Min.	18.5	19.5	19.1	19.6	19.8	20.5	20.0	21.2	19.1	19.3	20.1	20.8	17.6	18.0	18.9	21.1	16.4	13.2	15.7	17.2	16.5	15.9	13.0	14.0	14.4	14.5	13.3	12.6	14.8	15.7	15.1
1990	Max.	18.4	18.3	18.4	18.0	18.7	19.0	18.5	20.5	20.2	15.4	14.9	18.9	18.3	16.9	16.9	18.3	18.4	19.4	19.1	20.2	19.8	17.2	17.1	21.1	20.3	22.2	21.7	18.3	17.6	18.6	18.3
	Min.	15.0	15.0	16.3	16.3	15.1	15.0	14.9	15.1	15.5	14.8	13.3	13.1	15.6	15.2	15.3	15.2	15.4	15.4	16.1	16.0	16.0	16.0	15.6	15.4	15.1	14.9	17.1	16.9	16.3	16.1	16.0
1991	Max.	18.6	16.4	16.3	20.6	17.6	17.7	17.9	20.5	22.3	20.3	20.1	22.6	23.8	23.5	20.4	22.8	24.2	21.4	18.4	18.9	17.1	21.3	20.8	19.4	19.4	20.6	19.5	21.1	18.3	16.5	16.3
	Min.	16.2	14.8	14.2	14.1	14.1	13.2	13.8	13.4	15.5	16.8	16.8	16.8	18.0	18.9	17.1	16.7	17.6	18.8	15.3	15.1	15.4	16.8	16.0	14.4	14.8	15.9	14.3	14.5	16.0	15.1	12.9
1992	Max.	18.8	18.4	19.3	19.0	18.1	19.6	19.6	20.1	21.4	21.5	21.0	22.2	20.3	19.1	21.0	21.1	21.0	22.5	20.9	20.6	21.9	19.0	18.8	17.5	17.5	18.3	17.0	16.5			
	Min.	17.0	15.3	14.8	16.6	16.8	16.5	16.9	16.8	17.2	18.1	18.6	18.6	17.6	16.3	16.5	16.9	17.2	17.9	19.2	17.9	18.8	16.5	15.4	16.2	16.5	14.4	15.0	16.1			
1993	Max.	21.9	22.6	23.0	22.3	22.5	22.6	21.8	22.3	21.5	21.4	21.5	21.6	21.5	19.3	20.5	20.6	20.9	21.9	21.0	19.4	18.5	20.9	20.3	19.0	19.1	18.0	15.3	17.9	16.4	15.5	14.4
	Min.	18.4	18.6	20.0	20.9	20.1	20.1	19.9	19.0	18.8	18.0	18.0	19.3	18.3	18.1	17.3	17.7	18.7	18.1	18.0	18.0	17.0	15.4	17.0	17.0	16.5	14.6	13.8	14.1	14.1	12.8	12.8
1994	Max.																															
	Min.																															
1995	Max.	19.9	21.5	22.4	20.4	21.3	22.0	23.5	25.0	25.0	25.0	25.3	24.4	22.0	21.3	19.6	22.4	19.7	20.0	19.3	22.7	23.6	21.1	16.9	16.3	18.5	17.2	16.8	19.2	17.8	16.0	
	Min.	17.3	14.9	15.4	15.5	17.4	17.3	17.3	19.2	18.4	18.8	19.2	20.0	15.8	13.9	17.0	18.1	16.0	14.1	15.4	15.9	19.5	16.4	14.9	14.1	14.9	14.6	13.3	13.3	14.4	14.0	
1996	Max.	24.1	22.2	22.0	24.4	24.5	26.1	25.7	26.6	26.2	26.2	25.6	24.3	24.1	21.9	22.4	23.6	24.0	24.1	22.5	23.5	24.2	24.0	24.1	21.5	23.4	22.5	22.0	23.9	20.8	22.4	20.2
	Min.	19.5	19.6	19.4	18.9	19.1	21.5	20.0	21.7	21.2	21.0	22.2	21.0	20.3	20.0	19.2	17.9	18.6	20.0	19.4	16.8	17.2	18.0	17.3	18.9	19.0	18.0	17.0	17.2	18.3	17.2	15.7
1997	Max.	24.0	21.5	25.5	21.5	19.3	22.4	22.7	22.3	24.6	22.9	25.1	22.9	18.7	19.2	21.5	19.5	20.2	17.7	17.8	22.3	22.4	19.8	20.1	19.2	19.0	19.0	21.1	21.5	19.3	16.9	16.9
	Min.	18.5	18.3	18.5	18.0	17.5	16.5	17.1	16.1	18.3	19.1	19.3	17.0	15.1	16.5	15.9	17.3	16.5	14.9	13.4	13.6	15.4	15.4	15.6	16.1	16.5	16.5	16.6	16.4	15.4	14.6	12.6
1998	Max.																															
	Min.																															
1999	Max.	24.5	27.3	25.3	26.2	24.8	20.8	22.2	20.8	20.6	19.7	23.5	19.7	21.9	22.4	19.5	19.5	22.1	19.6	19.5	22.6	22.2	18.9	19.5	21.4	19.8	21.1	20.8	22.0	20.4	21.0	22.3
	Min.	20.8	20.1	19.7	19.9	20.1	19.5	17.8	18.0	15.8	15.7	15.7	17.7	17.1	19.8	16.8	15.1	16.9	18.0	16.7	15.1	18.4	17.0	16.6	15.9	17.6	15.8	17.1	18.9	18.1	16.4	16.6
2000	Max.	24.0	24.5	25.1	23.3	26.0	26.9	26.0	23.4	20.5	18.7	18.5	22.0	24.5	25.9	23.2	25.4	25.5	24.5	23.0	23.5	24.5	21.8	22.0	23.0	21.5	22.9	25.2	23.2	20.6	21.1	20.9
	Min.	17.9	17.9	17.8	18.7	20.8	20.3	20.1	20.0	19.0	17.0	16.9	16.7	17.5	18.0	19.7	20.2	21.0	20.9	18.5	19.5	20.8	18.9	16.4	17.1	18.4	17.5	18.5	19.5	16.7	14.5	15.8

Appendix 3d. Maximum and minimum water temperatures (°C) measured at the fishway in Middle Brook for the month of September, 1985-2000.

Year		Date																												
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1985	Max.																														
	Min.																														
1986	Max.																														
	Min.																														
1987	Max.	19.4	18.6	18.8	16.8	14.5	14.5	15.0	13.4	11.7	13.7	14.3	16.8	17.2	18.4	16.8	17.8	17.5	16.6	11.9											
	Min.	12.9	15.9	13.5	12.3	12.1	12.4	13.6	11.6	10.7	10.9	10.8	9.6	9.6	11.4	13.7	12.9	14.7	12.5	10.4											
1988	Max.	22.6																													
	Min.	16.4																													
1989	Max.																														
	Min.																														
1990	Max.	21.7	20.4	23.8	23.5	24.2	23.4	22.5	22.0	24.0	23.4	19.4	19.3	17.6																	
	Min.	16.1	17.9	17.7	18.8	18.7	18.8	18.7	17.9	17.6	19.2	18.8	17.3	17.3																	
1991	Max.	13.4	15.3	17.4	19.6	16.7	15.4	14.9	15.4	13.6	14.2	14.0	13.5	12.6	14.1	15.1	14.4	17.6	15.6	15.1											
	Min.	11.9	11.2	13.2	14.4	14.7	14.8	14.2	13.0	11.6	11.6	12.3	12.3	11.6	11.1	11.6	13.1	13.6	12.8	14.6											
1992	Max.																														
	Min.																														
1993	Max.	18.0	16.3																												
	Min.	13.0	14.1																												
1994	Max.																														
	Min.																														
1995	Max.																														
	Min.																														
1996	Max.	21.0	21.0	19.4	17.4																										
	Min.	16.5	15.7	13.7	14.8																										
1997	Max.	18.5	19.6	17.8	18.6	19.8	19.0	20.4	18.0	15.1	15.4	17.5	17.5	16.5	17.1	18.3	16.5	15.1	17.8	16.0	17.6	16.4	14.8	14.6	13.0						
	Min.	12.9	15.9	15.8	16.7	14.3	15.1	14.9	14.9	14.3	14.3	13.9	14.8	15.2	15.6	15.1	15.3	13.9	13.7	15.1	15.3	13.3	13.4	13.3	11.4						
1998	Max.																														
	Min.																														
1999	Max.	23.8	24.5																												
	Min.	18.0	19.3																												
2000	Max.	19.6	17.6	18.9	20.0	17.6	16.1	18.4	16.0																						
	Min.	17.6	14.1	12.9	14.2	15.9	12.7	12.2	13.9																						

Appendix 4a. Maximum and minimum water temperatures (°C) measured at the counting fence in Northeast Brook, Trepassey for the month of April, 1984-2000.

Year		Date																											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1984	Max.																														
	Min.																														
1985	Max.																														
	Min.																														
1986	Max.																			5.2	4.0	6.5	8.6	10.5	10.3	11.2	12.2	11.6	12.0	11.2	11.1
	Min.																			2.9	3.2	3.7	6.0	7.6	9.2	9.2	10.5	10.3	8.8	10.3	7.1
1987	Max.																														
	Min.																														
1988	Max.																				5.1	4.9	5.0	5.1	6.3	5.0	5.4	7.4	7.4	9.2	6.5
	Min.																				4.8	4.4	4.4	4.3	4.2	4.6	4.0	3.8	4.9	5.0	6.1
1989	Max.					2.2	2.4	2.5	2.8	3.3	3.5	3.3	4.6	4.3	3.6	5.1	3.4	5.6	5.4	4.4	5.7	4.6	4.4	5.9	7.0	6.8	7.8	6.9	7.5	8.0	9.4
	Min.					2.2	1.8	1.7	1.8	1.7	2.4	2.5	2.0	2.7	2.4	1.7	2.7	2.6	2.9	3.8	2.9	3.8	3.8	3.4	4.2	4.7	4.7	5.2	5.0	5.0	5.4
1990	Max.											3.6	4.9	6.2	6.1	5.2	4.6	4.4	5.7	6.9	7.6	5.7	5.0	4.9	6.3	6.7	7.1	6.6	7.8	8.1	8.6
	Min.											3.1	2.5	2.5	3.2	3.7	3.9	3.5	3.3	3.0	3.7	4.9	3.7	3.4	3.8	4.9	5.1	4.9	3.7	4.1	5.2
1991	Max.								3.3	5.3	3.5	4.0	3.4	2.8	5.2	5.0	4.2	5.9	6.6	7.7	8.2	6.8	6.5	7.7	7.1	7.8	7.6	9.1	9.4	7.4	7.8
	Min.								3.2	2.5	2.9	2.8	2.0	1.3	1.1	2.0	2.5	2.3	3.0	4.3	5.4	6.0	5.8	5.6	5.9	5.5	6.0	5.4	5.7	5.8	5.7
1992	Max.		2.2	2.3	3.0	3.7	2.8	2.2	2.1	2.5	3.7	2.8	3.2	3.3	2.6	2.5	4.6	5.6	5.5	7.1	7.0	6.2	5.1	4.5	4.8	4.9	6.8	3.7	3.6	4.3	6.3
	Min.		2.1	1.2	1.9	2.1	2.3	1.7	1.2	1.0	1.2	1.7	0.8	1.9	1.3	0.8	0.8	1.4	2.1	2.6	3.7	4.3	4.6	3.4	2.8	2.5	2.0	2.2	2.9	2.6	2.4
1993	Max.																				6.6	6.4	6.2	6.7	6.7	7.6	6.8	6.1	5.5	4.9	5.8
	Min.																				6.1	5.4	5.8	5.5	5.6	4.9	5.7	5.6	4.4	4.1	4.6
1994	Max.													3.7	4.4	6.1	5.8	5.0	4.7	4.5	5.3	6.7	7.4	7.4	6.9	7.5	8.3	6.0	6.8	5.7	8.4
	Min.													3.4	2.3	3.3	4.1	4.6	3.3	3.2	3.9	4.2	5.1	4.9	4.6	4.5	4.8	5.3	4.3	4.6	4.1
1995	Max.																														
	Min.																														
1996	Max.																									7.5	10.6	11.9	11.6	10.4	11.8
	Min.																									7.5	6.0	6.9	9.0	9.0	8.9
1998	Max.																														
	Min.																														
1999	Max.																												6.4	6.2	8.6
	Min.																												5.7	5.5	5.2
2000	Max.																											9.3	7.8	8.1	7.1
	Min.																											5.8	6.8	6.7	5.8

Appendix 4b. Maximum and minimum water temperatures (°C) measured at the counting fence in Northeast Brook, Trepassey for the month of May, 1984-2000.

Year		Date																													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1984	Max.																															
	Min.																															
1985	Max.																															
	Min.																															
1986	Max.	10.3	10.7	10.1	10.9	9.1	7.4	7.0	6.6	7.8	7.0	8.8	7.3	8.3	10.9	13.2	14.1	14.0	14.3	12.8	11.5	9.3	9.3	11.1	13.2	11.1	11.5	12.9	13.1	12.7	13.3	12.1
	Min.	8.5	9.1	9.4	7.9	7.9	6.3	6.0	5.3	5.5	4.9	5.0	5.3	5.1	5.1	6.3	8.9	9.5	9.5	11.0	10.3	8.5	8.7	8.5	8.5	9.9	8.1	8.7	10.9	11.4	10.2	10.6
1987	Max.																											13.4	12.7	12.6	12.6	14.0
	Min.																											6.8	7.2	8.2	7.1	6.4
1988	Max.	7.2	6.6	6.1	5.7	6.7	8.2	7.2	7.1	7.6	8.1	9.2	11.9	11.8	11.7	12.3	13.2	14.3	14.9	13.5	16.1	16.5	17.1	14.8	15.6	14.0	13.1	15.1	16.4	16.0	14.0	16.0
	Min.	5.6	5.7	5.5	5.2	5.3	5.6	6.7	6.1	6.0	7.0	7.0	8.2	10.4	10.4	9.9	9.1	9.9	10.4	11.6	11.0	12.8	13.2	13.3	13.2	13.2	12.0	12.0	11.0	11.8	11.5	10.3
1989	Max.	9.3	8.3	9.4	8.8	10.8	11.6	10.2	10.2	10.0	13.5	15.0	12.2	12.3	11.3	10.6	11.4	13.1	13.6	12.4	13.3	11.8	14.5	17.4	17.2	15.0	17.1	14.8	13.0	16.5	16.5	18.1
	Min.	6.5	7.0	6.3	6.7	6.4	6.9	8.0	8.6	8.5	8.6	9.2	9.5	7.1	8.6	9.0	8.6	8.7	6.9	8.5	8.4	8.9	9.5	11.2	11.8	13.0	12.1	13.1	12.0	11.1	12.7	12.9
1990	Max.	7.2	6.8	7.4	9.2	6.2	4.9	5.8	8.1	10.0	7.7	7.5	9.7	9.9	9.6	10.1	10.2	11.1	8.2	7.5	8.2	8.9	8.0	7.3	9.5	11.3	13.8	14.8	15.8	11.6	10.7	11.5
	Min.	5.8	6.2	5.5	5.3	4.5	4.0	3.6	4.1	5.7	6.0	6.3	5.8	6.4	7.5	7.7	6.9	6.1	6.6	6.4	6.4	6.8	6.9	6.2	5.4	6.0	7.4	8.3	8.4	10.0	9.2	8.2
1991	Max.	9.9	8.9	9.6	10.6	10.1	9.1	7.7	9.4	11.0	12.1	11.4	9.1	8.6	11.1	9.8	10.6	8.4	11.2	12.1	12.4	9.6	8.4	10.8	7.9	10.1	11.4	12.4	9.4	7.6	7.7	9.4
	Min.	5.3	6.4	6.8	7.6	8.5	7.8	6.9	6.6	7.3	7.9	8.7	8.4	7.4	6.2	7.5	7.4	6.1	5.8	6.4	7.4	7.4	6.3	6.4	6.9	6.3	7.4	7.8	7.9	6.5	5.8	5.7
1992	Max.	4.3	6.0	5.3	4.6	6.6	6.9	8.3	8.4	8.7	7.4	7.8	8.3	10.1	9.7	11.4	12.1	14.1	12.0	10.0	11.1	10.7	14.2	12.1	14.8	11.9	11.8	11.0	9.8	12.6	14.9	16.8
	Min.	3.9	3.6	4.6	3.8	4.3	5.1	5.7	6.2	6.1	6.0	5.3	5.9	6.7	8.6	8.8	9.0	9.6	9.7	8.8	8.1	8.4	8.4	8.6	9.1	9.4	8.2	8.4	8.9	8.2	9.5	10.4
1993	Max.	5.9	5.5	5.2	5.5	7.1	6.9	9.0	7.3	5.5	5.6	7.8	10.0	8.4	8.1	7.5	10.8	10.3	11.3	10.3	9.3	9.4	9.1	9.4	10.3	11.9	10.8	11.9	11.8	10.6	10.7	11.6
	Min.	5.1	3.8	4.0	4.3	4.9	5.8	5.0	5.7	4.2	3.0	3.0	3.9	5.8	6.3	6.9	7.1	8.1	7.3	8.3	7.9	8.8	8.6	8.7	8.4	9.1	9.4	9.2	10.1	9.3	8.4	8.1
1994	Max.	6.6	8.6	9.4	10.1	7.3	6.6	8.1	6.8	8.3	7.6	9.9	8.6	9.4	8.9	7.9	10.1	9.1	7.8	8.4	9.9	11.9	8.6	11.6	12.6	9.3	8.4	8.6	9.1	12.3	12.1	11.5
	Min.	5.2	5.6	5.2	5.7	6.7	6.1	5.3	6.1	5.8	7.2	6.2	7.0	6.7	7.8	7.3	7.2	8.1	6.9	6.7	6.8	7.4	7.6	7.6	6.8	7.9	7.9	8.1	7.6	8.0	9.9	9.5
1995	Max.																															
	Min.																															
1996	Max.	14.3	15.6	12.0	12.9	11.1	9.1	10.3	10.7	11.0	12.4	8.9	7.8	7.2	8.0	7.4	6.8	9.2	10.1	12.5	12.6	9.8	11.8	11.6	12.0	13.6	11.3	14.1	11.8	14.9	11.2	11.1
	Min.	9.6	11.1	10.6	9.4	8.4	7.4	7.3	6.6	6.8	6.8	7.8	6.6	6.4	6.1	6.6	6.1	5.9	7.8	8.4	8.8	9.0	8.9	9.8	9.0	9.2	8.3	8.1	9.2	8.8	9.6	9.6
1998	Max.																															
	Min.																															
1999	Max.	9.8	9.1	11.4	12.9	16.0	16.1	15.9	17.5	17.5	14.8	14.7	13.9	12.1	11.1	14.8	16.9	16.9	18.0	19.8	19.5	16.4	15.3	14.3	13.6	12.4	11.3	10.9	10.7	13.9	14.9	17.0
	Min.	5.9	6.3	6.3	7.8	9.6	10.6	11.5	10.9	11.9	12.1	9.8	9.4	9.6	8.1	8.4	8.7	10.1	10.8	12.4	13.2	14.4	13.8	13.0	11.9	11.2	10.3	10.5	10.0	10.0	11.7	11.8
2000	Max.	7.0	8.1	8.1	9.4	10.2	11.1	11.6	8.5	10.0	11.2	12.4	9.8	8.6	11.3	13.1	12.3	14.2	14.8	12.1	11.6	11.1	13.6	15.4	12.4	10.4	9.5	12.4	14.1	11.8	13.8	15.1
	Min.	5.4	5.5	6.3	6.3	6.7	7.7	6.8	7.4	6.4	6.8	6.7	8.6	7.6	7.8	9.9	11.1	10.9	10.2	10.5	10.0	9.7	9.4	10.3	10.3	9.1	8.8	8.8	10.4	9.9	8.7	9.3

Appendix 4c. Maximum and minimum water temperatures (°C) measured at the counting fence in Northeast Brook, Trepassey for the month of June, 1984-2000.

Year		Date																												
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1984	Max.																													13.2	14.1
	Min.																													10.6	12.2
1985	Max.																												16.6	15.1	14.1
	Min.																												15.6	13.6	11.1
1986	Max.	13.4	12.0	11.6	11.8	9.9	11.8	13.1	14.4	11.3	11.8	10.8	11.6	13.6	11.7	12.6	16.9	14.5	12.0	13.5	14.4	13.1	17.3	17.2	15.6	14.1	13.7	15.0	17.5	14.4	11.5
	Min.	10.6	11.3	10.8	9.2	9.5	8.9	9.6	10.1	10.4	10.1	10.2	8.7	8.9	10.5	9.7	11.0	12.3	9.9	10.3	11.7	12.2	12.1	14.1	13.9	13.0	12.9	11.2	12.1	11.0	11.0
1987	Max.	12.6	11.1	13.7	15.4	14.7	16.1	17.7	15.3	11.3	11.0	11.0	14.3	14.7	12.8	12.7	14.6	16.4	14.8	16.7	15.3	17.7	17.0	17.3	17.2	14.2	13.7	16.2	16.2	11.2	17.6
	Min.	8.8	8.8	7.1	8.7	7.8	7.8	10.2	10.8	7.7	8.9	9.7	8.9	10.0	9.4	10.2	9.5	9.8	11.4	8.1	10.7	9.8	10.7	9.1	10.6	10.2	9.3	9.3	9.3	10.0	10.6
1988	Max.	12.2	11.5	11.4	13.2	10.8	10.9	10.5	10.6	11.6	10.7	11.7	11.2	12.5	13.5	13.0	14.4	16.8	14.0	13.9	13.8	13.3	15.0	13.3	15.1	15.6	13.8	13.2	13.4	13.4	12.9
	Min.	10.2	10.2	9.8	9.4	10.1	9.3	9.9	9.3	9.1	10.4	9.8	10.6	10.6	11.3	11.8	11.7	12.9	12.6	11.4	12.7	12.5	12.3	12.9	12.5	12.8	12.8	12.3	12.7	12.8	12.2
1989	Max.	15.7	12.1	13.8	13.1	16.0	14.5	17.3	15.7	17.1	15.2	12.5	14.4	13.0	16.7	17.3	19.0	17.7	15.7	14.2	12.9	15.0	14.3	15.6	17.3	15.5	16.3	18.5	17.6	19.3	19.8
	Min.	12.2	10.9	10.5	11.7	11.0	13.1	12.9	13.2	11.5	12.1	11.5	11.2	10.3	9.9	11.0	11.6	13.2	13.8	11.7	11.3	12.0	13.0	12.5	13.7	14.7	14.0	14.9	15.4	14.6	14.5
1990	Max.	13.2	14.5	16.8	12.8	11.4	12.5	11.5	11.4	12.2	12.8	10.6	15.0	13.2	15.4	15.1	14.0	12.9	13.1	13.7	13.1	12.0	13.1	13.9	12.2	16.0	15.9	15.1	18.2	15.1	16.3
	Min.	8.2	9.6	11.1	11.1	9.9	9.6	9.1	8.5	10.1	9.8	9.2	9.0	10.5	11.6	12.5	12.0	11.5	11.9	12.6	12.1	11.4	10.8	11.1	11.4	11.1	13.1	13.4	13.2	13.6	13.2
1991	Max.	9.6	11.1	13.8	12.6	9.4	12.1	13.3	14.9	13.3	15.6	13.0	12.3	12.7	11.9	14.9	16.7	18.5	15.9	14.8	18.8	16.5	18.2	20.5	17.6	18.0	18.3	16.4	14.4	14.6	17.8
	Min.	7.2	7.4	8.5	9.3	7.4	7.8	8.9	9.8	9.7	9.4	11.0	11.0	10.9	10.4	9.3	9.4	10.4	11.5	11.6	12.4	12.9	11.0	12.4	13.4	9.6	11.1	13.3	12.6	11.8	10.6
1992	Max.	14.8	18.0	16.3	15.9	17.0	16.4	16.2	14.5	13.8	16.4	16.8	17.5	17.6	19.3	19.2	17.4	14.0	12.8	14.4	13.3	15.5	16.2	15.9	18.0	20.6	17.9	18.1	17.9	16.7	18.5
	Min.	13.7	13.1	14.0	12.6	10.4	10.8	11.3	12.5	12.7	12.1	12.7	11.5	12.6	13.4	14.5	13.0	12.3	10.7	11.0	11.6	11.8	13.2	12.7	13.5	15.4	14.6	14.3	14.6	14.8	12.0
1993	Max.	10.1	13.0	13.9	12.3	15.7	14.4	10.8	10.6	11.7	13.9	11.4	12.1	13.6	15.7	12.6	17.5	17.4	15.6	17.4	17.1	14.9	13.8	12.4	13.2	13.3	13.6	14.4	13.2	12.6	12.6
	Min.	8.6	8.7	9.8	10.4	9.3	9.8	9.9	9.3	9.3	9.7	9.8	8.7	8.9	9.4	11.3	10.8	13.2	13.9	13.5	12.5	11.9	12.6	10.5	9.7	10.6	10.8	11.1	12.4	12.1	11.3
1994	Max.	10.9	10.4	8.9	12.2	12.3	11.6	10.9	10.6	10.2	11.9	14.4	16.5	17.1	14.8	18.6	17.5	17.8	16.2	18.5	19.1	16.3	18.0	18.7	19.1	16.5	17.6	17.0	15.1	17.4	20.2
	Min.	9.9	8.9	8.1	7.8	8.9	9.4	9.8	9.5	9.1	8.6	8.9	9.9	12.7	13.1	12.8	14.1	13.8	14.3	12.5	13.3	13.6	13.4	13.9	13.6	13.6	13.1	13.4	13.2	14.3	14.6
1995	Max.					17.1	14.6	15.9	15.6	18.1	18.0	16.0	16.1	14.4	14.1	17.7	19.1	17.9	15.4	19.5	20.1	20.8	21.2	21.5	18.5	18.5	19.9	17.4	19.5	19.0	17.3
	Min.					14.6	11.2	11.3	10.6	11.6	13.2	12.7	12.4	13.3	12.9	12.9	13.6	13.8	13.5	12.6	12.8	13.9	14.2	14.9	16.6	14.8	13.8	12.3	13.4	13.9	13.9
1996	Max.	11.2	13.3	14.4	13.6	12.9	12.4	15.9	13.6	15.7	16.9	14.5	17.1	15.9	15.9	14.6	13.4	16.1	16.9	18.0	17.0	13.9	15.3	17.9	18.4	19.6	16.0	12.7	14.4	16.3	17.0
	Min.	9.1	9.1	9.5	10.6	11.6	11.6	10.9	12.1	11.2	11.1	12.0	10.9	12.1	12.6	13.6	12.6	11.7	11.4	11.6	12.6	10.8	10.5	10.5	11.7	11.7	12.6	11.1	10.8	12.3	13.7
1998	Max.													19.5	20.9	21.6	17.5	19.5	17.5	17.5	16.6	19.3	19.9	20.5	21.0	20.0	18.5	17.2	16.0	18.8	16.4
	Min.													14.6	13.1	14.1	15.2	14.4	15.4	15.4	15.2	13.1	13.4	13.9	15.4	16.5	16.6	13.4	11.6	12.9	14.6
1999	Max.	14.9	15.1	14.9	14.8	16.6	13.7	13.1	14.6	15.4	16.0	18.0	20.0	21.1	20.2	19.2	17.3	16.8	15.1	17.0	19.5	20.8	17.6	17.1	16.9	19.7	16.8	20.6	17.4	15.0	17.9
	Min.	14.0	12.7	13.3	11.8	11.4	12.1	11.4	10.5	10.8	11.6	11.8	13.9	15.1	17.2	16.5	14.1	14.9	13.7	12.8	14.5	15.3	15.9	14.9	13.9	14.3	15.4	14.6	14.9	13.5	13.4
2000	Max.	12.1	15.9	12.8	13.1	12.6	15.6	12.1	11.8	13.4	13.3	14.1	14.1	16.0	17.0	15.1	13.6	16.5	19.6	18.7	19.6	19.5	19.7	17.1	20.6	21.1	18.1	21.6	18.9	19.2	17.8
	Min.	10.8	9.6	11.3	9.9	10.6	9.7	10.6	9.8	10.8	11.1	10.6	11.2	11.2	11.8	12.2	12.3	12.4	13.4	13.6	14.8	14.9	14.3	15.7	14.8	14.1	15.4	14.1	15.4	14.9	15.5

Appendix 4d. Maximum and minimum water temperatures (°C) measured at the counting fence in Northeast Brook, Trepassey for the month of July, 1984-2000.

Year		Date																													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1984	Max.	15.5	18.4	18.6	16.4	16.3	16.4	19.9	19.3	19.2	18.6	17.7	17.5	17.1	21.4	19.6	20.0	18.7	19.2	18.6	19.2	21.1	19.6	20.4	18.3	19.7	21.1	21.3	19.7	18.9	17.3	19.6
	Min.	13.2	14.1	13.9	14.8	13.4	14.3	14.1	17.9	17.5	17.2	16.9	16.1	16.2	16.0	17.9	15.1	16.4	16.3	16.7	16.7	16.8	18.0	17.0	16.4	16.3	15.7	16.4	18.0	16.7	15.4	15.9
1985	Max.	12.1	14.6	16.6	16.6	17.6	20.7	18.6	16.6	15.1	14.6	15.6	15.1	16.6	18.6	17.6	16.1	16.6	16.6	15.6	15.1	16.6	16.1									
	Min.	10.6	10.6	12.6	14.1	14.6	14.6	16.6	15.6	14.1	13.6	13.6	14.6	14.1	14.6	16.1	15.1	15.1	15.1	15.1	14.1	13.6	14.6									
1986	Max.	12.5	13.1	11.8	13.8	12.8	12.4	13.3	13.5	14.3	15.0	16.4	15.3	16.7	19.9	17.2	15.4	16.4	19.3	21.1	19.0	16.4	16.4	18.5	19.5	17.9	19.3	20.7	20.6	16.6	13.6	12.3
	Min.	10.7	10.9	11.5	11.3	12.1	11.7	10.5	11.0	12.0	12.0	12.8	12.5	13.1	13.9	13.9	13.3	13.1	13.4	16.0	16.6	15.2	14.2	14.0	15.1	14.8	15.3	16.1	16.0	14.7	12.7	12.1
1987	Max.	17.2	20.0	18.9	16.5	14.8	12.3	16.2	21.0	21.4	20.7	19.7	20.2	20.1	21.4	19.7	17.7	21.3	20.7	18.4	19.9	19.3	19.2	19.6	21.0	19.8	20.6	19.8	19.4	20.8	21.6	22.8
	Min.	12.3	11.6	10.2	9.8	11.4	9.9	9.1	13.1	14.1	15.6	15.4	13.8	16.3	16.4	16.3	15.3	15.2	13.9	14.0	12.6	13.7	12.0	10.7	15.0	15.2	14.9	15.7	14.5	15.2	13.9	15.8
1988	Max.	12.9	13.3	13.5	15.6	15.5	18.2	16.1	15.1	16.1	19.2	17.6	14.8	14.6	15.0	15.5	18.5	15.9	17.8	19.6	17.7	18.5	16.8	17.8	17.1	15.9	13.4	13.7	15.7	16.2	17.3	16.5
	Min.	12.1	12.7	12.9	12.6	14.2	14.1	14.1	13.3	14.9	15.0	14.9	14.6	14.3	13.7	13.7	14.3	14.9	14.3	15.6	17.2	16.8	15.6	16.0	15.9	13.5	12.8	12.8	13.2	14.2	15.1	15.5
1989	Max.	20.2	17.8	21.3	21.2	19.7	18.1	16.2	14.5	14.8	14.6	14.7	16.5	17.1	15.7	18.0	18.0	17.1	16.7	18.3	19.9	17.6	19.6	21.6	18.8	19.3	19.1	17.6	17.4	17.3	19.0	20.6
	Min.	15.0	14.9	14.1	15.2	16.5	16.2	13.7	13.8	13.7	14.1	14.3	14.0	14.4	14.6	14.5	15.4	15.3	14.7	15.2	15.7	15.8	14.8	15.2	16.0	15.0	15.9	16.2	16.2	15.7	15.9	16.0
1990	Max.	15.0	14.0	16.3	13.6	17.9	18.6	15.1	19.1	14.7	15.9	17.3	17.9	19.4	20.9	21.4	17.2	19.6	17.6	18.1	16.5	21.8	22.6	19.0	23.2	22.7	23.2	23.1	22.9	23.2	23.0	22.2
	Min.	13.7	12.8	12.6	12.7	11.5	11.9	12.8	12.0	13.1	12.4	13.0	13.3	13.5	13.4	14.5	14.6	14.5	15.6	14.9	15.0	14.5	15.8	16.6	16.8	18.7	17.8	15.8	17.2	16.2	14.8	16.1
1991	Max.	15.6	18.6	19.1	19.5	20.9	21.4	19.0	16.8	20.2	19.9	19.6	20.8	17.5	16.5	21.0	21.1	18.1	18.0	19.0	21.7	19.2	20.7	17.4	20.6	22.1	19.1	18.1	22.6	22.0	23.3	20.8
	Min.	11.9	11.4	11.6	13.2	13.6	14.3	14.9	14.1	13.9	14.4	14.9	14.8	14.8	14.4	15.1	15.4	15.6	15.2	14.6	15.8	16.5	15.2	15.0	15.0	15.5	16.5	16.0	15.8	16.3	14.9	16.1
1992	Max.	16.7	15.2	13.7	13.1	16.8	13.5	12.5	13.0	14.4	13.8	12.2	14.7	15.2	16.0	14.8	17.1	17.8	19.3	16.5	17.5	17.2	16.4	17.7	17.1	20.2	20.1	20.5	18.9	17.0	17.6	19.5
	Min.	13.3	13.7	12.4	11.2	10.2	12.5	11.2	10.8	11.9	11.9	11.5	11.8	12.7	12.8	13.1	13.1	13.2	13.1	14.6	13.6	15.0	14.7	14.3	14.8	14.7	15.7	15.5	16.1	14.9	15.5	15.9
1993	Max.	15.9	17.1	15.6	12.4	12.4	15.1	15.6	16.6	15.4	18.0	16.0	19.1	17.0	16.2	14.9	14.1	16.3	15.1	16.1	16.5	15.5	14.3	13.8	13.1	14.9	16.3	17.1	16.8	16.5	16.1	15.9
	Min.	11.6	12.7	12.8	10.8	11.4	11.5	12.8	14.0	14.4	13.8	14.2	13.6	14.9	14.0	13.6	12.9	13.1	13.8	13.2	13.3	13.4	12.5	12.9	12.5	11.9	12.4	13.2	13.6	14.4	14.9	14.2
1994	Max.	18.5	17.3	19.9	19.4	17.0	17.1	18.9	17.5	15.6	15.4	20.0	19.6	17.6	22.4	19.9	17.0	19.6	18.6	19.6	20.1	18.7	19.5	20.1	18.3	16.8	16.5	18.4	21.4	21.8	23.1	21.8
	Min.	15.4	15.9	15.1	14.0	14.4	14.5	13.7	13.4	13.7	13.9	14.0	14.1	14.8	15.1	15.9	15.8	14.4	15.0	15.6	15.9	16.3	15.8	16.3	16.1	14.4	15.3	16.0	17.4	18.7	17.4	19.1
1995	Max.	14.7	15.3	18.9	20.4	21.1	21.4	22.6	23.9	21.4	20.0	22.9	24.0	22.5	22.5	20.5	19.4	20.1	17.1	15.7	19.7	18.8	20.9	17.9	21.3	23.2	21.1	21.5	23.0	18.6	20.8	20.3
	Min.	14.1	13.8	14.1	14.8	17.3	16.9	17.2	19.0	19.5	18.6	18.5	19.8	18.6	18.3	18.2	15.9	15.1	14.3	13.9	14.3	16.2	15.7	15.7	16.3	16.9	18.1	17.8	16.6	16.1	16.6	17.8
1996	Max.	15.2	14.6	15.9	15.4	13.4	14.2	13.8	16.6	18.6	17.4	17.6	19.8	21.5	18.3	17.1	16.2	15.1	16.4	18.5	16.9	15.9	16.3	17.1	18.0	17.6	19.1	18.0	20.1	17.8	18.6	19.7
	Min.	14.1	13.7	13.6	13.4	13.0	12.9	13.1	12.2	14.1	15.0	14.1	14.4	15.6	16.5	14.3	14.3	13.9	14.1	14.4	15.5	15.1	14.5	14.6	15.1	15.4	15.4	16.5	16.1	16.1	16.2	16.1
1998	Max.	14.8	14.4	17.5	15.9	13.9	14.9	18.5	17.6	14.1	14.1	14.4	15.6	18.7	19.1	21.5	23.0	20.8	18.5	20.5	18.9	19.0	19.3	18.0	17.8	19.8	21.2	21.0	22.0	19.9	19.5	18.8
	Min.	12.1	12.4	12.5	13.9	13.1	13.1	13.6	13.1	12.4	13.1	13.1	13.3	13.8	15.1	15.7	18.0	18.8	15.4	16.1	16.6	16.2	16.5	15.1	16.4	15.6	17.1	17.6	17.5	18.4	17.9	17.4
1999	Max.	19.6	18.8	18.5	17.5	18.7	17.5	19.0	19.1	20.9	20.1	21.1	21.3	19.5	18.8	19.6	19.8	18.2	17.5	18.3	20.6	21.9	21.8	20.8	24.1	24.0	21.0	20.1	21.6	21.0	23.1	21.0
	Min.	15.1	16.5	15.2	16.1	14.9	14.4	14.9	16.4	15.9	16.9	17.6	17.3	16.6	15.4	16.5	16.3	16.6	15.8	15.9	14.9	14.9	16.5	17.5	18.0	19.4	18.9	17.9	17.3	18.0	18.7	19.6
2000	Max.	15.6	17.4	19.8	22.4	20.5	17.9	15.1	15.1	18.1	19.3	18.0	16.4	15.9	18.0	19.5	21.5	21.1	19.8	17.7	18.6	20.1	20.0	20.1	19.3	20.5	19.5	18.0	19.1	20.0	17.9	16.6
	Min.	13.9	14.2	15.2	17.3	18.0	15.2	14.4	14.1	14.6	15.6	15.4	14.4	15.4	14.8	14.8	16.5	17.5	17.8	17.0	16.1	15.9	16.1	17.0	17.1	17.0	17.1	16.7	16.4	15.5	16.5	15.5

Appendix 4e. Maximum and minimum water temperatures (°C) measured at the counting fence in Northeast Brook, Trepassey for the month of August, 1984-2000.

Year		Date																													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1984	Max.	18.9	18.0	20.0	21.4	19.8	21.1	21.0	20.7	22.2	21.1	19.1	18.9	20.0	20.1	21.1	21.5	20.4	20.5	19.6	17.7	17.1	17.1	18.3	18.1	17.5	16.6	17.4	18.1	19.4	19.3	18.3
	Min.	17.6	17.5	16.4	17.4	18.6	17.8	18.3	19.1	19.5	15.6	17.5	18.0	17.8	18.7	17.1	16.7	18.2	19.1	17.9	16.9	16.5	15.5	15.6	16.9	16.4	15.7	15.2	16.2	16.2	17.8	17.6
1985	Max.																															
	Min.																															
1986	Max.	12.5	13.5	17.6	16.7	17.4	18.4	19.3	17.7	19.1	17.6	17.9	18.5	20.2	20.4	20.2	20.2	21.4	21.6	21.1	18.7	16.5	17.9	16.4	16.3	14.7	16.4	18.2	15.1	15.8	15.8	17.0
	Min.	12.0	12.6	13.0	15.4	15.2	15.7	15.9	16.6	16.0	16.8	15.7	16.8	16.9	15.9	16.6	17.3	17.6	17.3	18.5	15.6	14.6	13.8	14.6	14.0	13.5	14.1	13.9	14.5	15.1	14.3	13.8
1987	Max.	20.4	17.4	16.5	17.0	19.8	19.2	20.9	20.5	18.2	18.8	19.8	17.9	13.4	18.1	16.8	16.9	14.2	14.0	18.2	20.0	18.8	20.3	18.2	18.9	17.4	17.2	16.8	16.1	17.4	15.7	16.4
	Min.	15.8	14.4	14.3	13.9	14.9	15.8	15.0	12.5	12.2	12.0	12.5	12.7	11.3	10.2	14.3	13.2	12.8	12.6	13.5	16.2	15.5	14.3	13.6	15.6	11.9	11.8	13.3	10.4	10.6	13.3	11.7
1988	Max.	17.6	16.9	19.0	18.9	19.8	19.2	16.5	17.2	19.0	18.9	21.0	19.8	22.6	19.8	17.9	16.7	15.8	14.0	15.4	16.2	16.3	16.7	15.8	16.8	18.5	18.8	17.0	19.1	18.5	18.8	18.1
	Min.	15.0	15.9	15.2	14.5	16.6	16.8	15.1	15.6	16.5	17.0	17.3	16.0	17.7	17.8	15.4	15.2	14.4	13.5	13.4	14.2	14.8	14.9	14.3	13.5	13.9	14.6	14.7	16.0	17.1	16.9	17.3
1989	Max.	21.4	22.1	22.5	19.3	20.8	20.2	19.7	19.2	22.3	22.2	23.1	20.5	19.3	22.3	22.1	22.7	20.8	21.6	23.0	20.4	17.5	18.9	17.9	17.1	16.4	16.9	16.7	18.1	18.7	16.1	16.6
	Min.	16.4	16.4	16.5	16.4	17.2	17.6	18.3	17.7	16.3	17.3	17.3	18.5	17.1	17.8	17.9	17.4	17.8	16.4	17.4	17.1	16.7	16.5	16.7	16.1	15.0	14.4	13.9	13.3	14.4	15.2	14.6
1990	Max.	18.2	15.0	15.3	16.1	17.8	17.1	19.1	18.7	19.0	19.7	18.5	19.8	20.3	19.5	18.9	20.3	21.1	19.1	19.3	18.7	19.0	20.0	19.2	19.5	21.2	18.3	16.6	16.8	18.3	20.0	19.9
	Min.	14.4	12.4	11.7	12.6	12.8	15.4	15.6	17.3	16.7	15.5	16.7	16.6	18.0	17.0	16.3	16.8	17.6	17.5	15.4	14.6	14.6	14.7	14.7	13.6	15.6	15.6	15.5	15.6	16.1	16.7	15.7
1991	Max.	18.6	17.9	16.6	15.9	15.3	18.1	18.3	21.0	21.0	19.0	17.5	19.4	18.5	21.3	19.6	22.0	20.9	21.8	20.8	20.5	18.5	18.4	17.4	19.0	19.5	17.5	20.0	20.1	18.5	17.6	16.6
	Min.	15.4	15.5	13.9	13.9	13.4	12.7	13.2	13.9	14.1	14.8	15.0	15.6	15.9	16.1	17.3	15.9	17.1	17.4	16.5	16.0	15.8	16.3	15.8	13.3	13.2	14.9	13.6	14.6	15.8	15.6	15.4
1992	Max.	19.0	17.1	16.7	17.3	16.9	16.6	18.0	19.9	21.4	20.9	18.5	17.6	20.1	17.6	20.9	21.5	17.9	20.6	19.2	18.7	19.3	18.1	17.2	16.7	19.0	19.3	16.0	17.1	16.6	15.8	18.9
	Min.	15.8	15.0	13.9	14.4	15.5	15.2	14.8	14.9	16.5	16.5	17.4	16.5	15.5	15.5	15.6	15.6	16.5	16.5	17.7	17.2	17.2	16.7	14.4	14.0	14.7	14.6	14.0	14.9	15.2	14.5	14.3
1993	Max.	19.5	18.4	17.0	17.9	18.1	18.5	17.5	16.4	17.2	18.0	17.3	18.6	16.6	16.1	17.1	17.4	18.6	19.9	19.8	16.6	17.5	17.8	18.5	17.1	16.7	15.6	17.0	17.5	17.6	15.9	14.3
	Min.	14.6	16.9	16.1	15.7	16.1	16.1	15.2	14.4	14.1	14.2	14.6	14.8	14.9	14.5	14.4	13.4	12.9	14.2	14.5	15.9	15.6	14.1	15.1	15.4	15.1	14.1	13.2	14.1	13.5	12.9	12.7
1994	Max.	21.6	20.0	21.3	20.5	19.4	21.6	20.1	19.0	18.0	19.4	20.1	20.0	17.9	20.0	20.1	21.3	20.0	19.4	22.1	19.8	19.5	18.6	20.7	21.0	21.0	19.6	18.5	20.9	19.5	19.3	19.7
	Min.	18.9	17.8	17.0	17.8	18.0	18.0	18.8	18.1	17.0	16.9	16.9	16.3	16.7	17.1	17.6	16.3	16.9	16.6	17.2	18.4	18.1	17.6	16.8	15.9	15.5	16.9	17.5	17.3	18.3	16.2	14.9
1995	Max.	22.8	20.0	22.5	22.0	23.5	22.6	25.1	24.2	26.0	26.3	24.1	23.6	22.4	23.3	21.4	23.5	21.5	23.3	23.5	19.6	23.5	22.0	18.9	17.7	21.6	19.4	20.6	21.5	18.8	16.5	16.7
	Min.	17.0	14.6	15.6	15.8	16.5	17.1	17.1	17.8	18.1	19.1	18.9	19.2	19.0	17.8	17.0	18.0	18.0	15.9	16.0	16.2	18.3	17.4	17.0	16.5	16.4	17.3	16.0	15.4	15.6	14.9	14.9
1996	Max.	21.6	19.7	18.0	20.1	20.0	24.1	23.5	23.0	19.7	18.6	21.3	23.0	21.4	19.5	20.0	21.4	19.0	20.4	19.4	19.0	20.3	21.0	21.8	19.1	21.0	22.1	22.0	21.0	19.1	17.8	17.8
	Min.	16.9	18.1	17.0	16.1	17.6	17.0	18.4	18.9	17.6	17.1	17.4	18.0	17.0	18.0	17.4	16.8	17.5	17.3	17.7	16.0	15.6	15.1	15.6	17.4	17.2	18.0	17.1	17.6	17.8	16.4	15.3
1998	Max.	20.8	21.9	23.5	24.0	23.8	23.6	23.8	23.3	23.7	23.5	21.1	20.6	21.2	23.0	22.1	24.1	21.0	19.3	21.8	21.9	22.2	22.2	21.2	18.8	16.6	17.0	17.8	18.4	16.4	15.8	16.5
	Min.	16.3	17.0	17.5	17.8	17.5	18.4	18.0	17.9	18.5	19.2	18.9	18.9	18.0	17.0	17.0	18.3	18.7	18.4	17.8	17.0	16.3	17.0	16.0	16.7	15.4	15.3	15.6	15.4	15.3	14.9	15.1
1999	Max.	20.0	24.4	24.5	24.5	21.6	21.5	23.0	20.1	21.4	20.9	23.3	20.4	19.9	22.6	20.6	22.8	23.5	20.9	20.7	22.7	19.9	18.4	23.3	20.5	23.1	21.3	19.8	21.4	19.8	18.1	20.9
	Min.	19.0	18.1	18.4	18.0	19.1	18.4	18.0	17.7	17.5	16.5	16.5	17.6	18.3	18.0	18.9	17.5	17.4	18.9	18.4	15.6	16.6	16.8	16.5	17.5	17.2	17.0	17.6	18.6	18.2	16.1	14.4
2000	Max.	17.1	20.0	21.0	18.9	18.6	22.4	22.2	19.9	16.5	16.1	17.6	17.1	19.0	20.1	19.6	22.6	21.3	20.5	19.8	19.1	19.5	20.1	20.8	21.3	19.0	21.3	20.6	22.0	19.9	20.3	18.6
	Min.	14.9	15.1	16.8	17.1	17.2	16.3	17.3	16.4	16.0	15.7	15.6	16.1	15.4	16.0	17.8	18.0	19.6	18.9	18.9	18.4	17.6	17.3	17.0	16.8	17.9	17.1	17.4	17.6	17.3	15.9	15.9

Appendix 4f. Maximum and minimum water temperatures (°C) measured at the counting fence in Northeast Brook, Trepassey for the month of September, 1984-2000.

Year		Date																													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1984	Max.	18.7	17.5	16.2	16.8	16.9	16.2	15.8	14.9	14.3	15.4	15.9	16.2	15.3																	
	Min.	17.5	17.1	14.8	13.2	13.6	15.3	15.4	13.9	12.7	13.3	14.3	14.5	14.9																	
1985	Max.																														
	Min.																														
1986	Max.	17.5	16.0	15.2	14.5	15.1	17.1	18.5	15.4	17.5																					
	Min.	13.6	13.4	13.7	12.1	12.3	12.2	14.7	14.6	14.3																					
1987	Max.	15.2	15.3	15.8	16.2	13.3	13.9	16.7	15.2	14.6	13.9	11.7	13.8	14.3	16.0	14.6	15.5	15.6	15.1	13.9	11.9	13.3	12.3	12.8	14.0	13.9	12.9	11.5	10.4	10.6	12.2
	Min.	11.8	13.9	12.6	11.3	11.7	10.6	13.2	13.3	13.0	12.4	9.3	6.7	8.9	10.4	12.2	12.3	12.7	13.2	10.8	10.2	10.6	10.7	9.8	11.8	10.8	10.7	8.7	6.4	8.4	11.0
1988	Max.	20.1	19.1	16.9	16.1	17.3	15.5	15.3	16.3	17.0	17.0	16.7	16.4																		
	Min.	16.7	17.1	15.2	13.1	13.3	15.1	14.5	14.1	14.2	14.1	15.8	15.1																		
1989	Max.	16.3	17.0	16.8	17.3	18.0	18.4	18.4	18.0	18.7	18.8	18.5	19.4	19.8	17.5	15.2	15.4	14.7	15.3	14.1	15.6	16.3	16.4	15.9	16.5	14.8	14.4	13.1	12.5	12.3	11.7
	Min.	14.8	15.2	14.1	13.1	13.4	13.4	13.5	13.2	15.1	16.8	17.5	17.6	16.4	14.7	13.8	13.7	13.9	12.6	12.9	14.6	13.4	14.0	15.1	12.4	11.4	12.9	11.7	11.2	11.2	10.5
1990	Max.	19.0	20.2	17.4	19.7	21.1	21.4	18.4	18.9	19.1	16.0	15.0	15.5	15.8	16.5	17.4	18.4	17.7	17.2	16.5	15.2	15.1	15.3	16.0	15.0	14.3	13.3	14.1	13.4	13.8	13.3
	Min.	14.1	14.2	14.2	14.1	14.9	15.5	15.8	12.8	12.7	14.3	13.7	13.1	12.7	12.0	13.8	15.0	15.5	15.0	13.7	14.1	13.5	12.4	13.6	14.0	13.1	12.3	11.6	12.3	12.2	10.7
1991	Max.	15.2	15.1	16.4	16.9	18.9	18.3	17.0	16.5	16.0	15.4	13.4	14.4	14.7	13.6	15.9	14.4	15.1	15.8	16.0	14.5	13.6	13.7	14.2	15.1	14.4	14.3	14.4	14.3	13.9	12.0
	Min.	12.7	11.4	13.0	14.1	14.7	15.8	15.4	14.3	13.1	12.7	12.6	12.1	12.3	11.1	11.3	12.7	12.8	12.4	14.1	13.6	12.6	11.8	11.9	12.3	13.3	13.6	13.6	12.9	11.3	11.1
1992	Max.	19.8	18.1	17.0	17.0	17.9	17.6	18.3	16.6	17.2	18.4	21.3	18.5	18.2	19.3	19.8	17.7	18.9	16.8	19.1	17.4	16.2	16.2	16.2	15.2	15.6	15.9	17.0	14.8	17.1	15.1
	Min.	16.1	15.9	14.8	13.4	12.6	12.7	11.9	14.4	14.5	16.0	16.6	17.2	16.1	14.7	15.2	15.6	13.8	15.5	15.7	16.4	14.5	14.4	14.2	14.1	12.7	12.0	12.0	13.2	13.3	14.2
1993	Max.	17.5	17.4	15.9	15.6	17.2	16.9	17.3	16.1	14.9	14.2	15.4	14.8	15.1	15.8	15.6	15.8	15.8	13.2	12.9	12.2	13.6	12.9	12.6	13.1	14.1	13.2	13.3	13.3	13.0	12.9
	Min.	12.6	11.9	14.2	14.1	13.4	14.2	14.9	14.3	13.4	13.1	13.1	12.4	13.0	13.8	13.8	11.9	11.1	12.4	12.2	11.4	10.8	10.7	11.6	11.6	11.4	11.6	12.2	12.9	12.4	12.4
1994	Max.	18.4	19.5	18.6	16.4	15.5	15.3	16.9	17.5	18.4	17.4	15.9	16.9	15.8	15.9	16.1	14.5	14.0	14.8	14.6	14.6	13.4	14.4	14.3	14.2	16.1	16.7	14.4	13.1	13.1	13.3
	Min.	15.9	14.6	13.9	14.4	13.7	13.6	14.1	14.9	14.7	16.0	14.9	14.8	14.6	13.3	12.5	12.4	13.6	13.9	13.3	12.4	12.0	10.9	10.6	11.5	12.8	13.6	12.6	11.9	11.7	12.1
1995	Max.	17.7	18.7	22.1	21.6	22.9	20.5	20.0	21.6	19.1	17.5	18.4	19.9	19.0	16.6	15.8	19.1	15.1	14.4	15.9	14.6	18.5	16.3	16.0	15.6	14.9	16.0	15.4			
	Min.	14.4	15.5	15.4	16.2	16.4	15.6	15.6	16.2	16.7	15.9	14.6	13.8	14.8	15.3	13.8	12.9	12.6	12.9	12.3	12.7	13.3	14.1	14.1	12.9	12.1	12.9	13.4			
1996	Max.	19.4	17.6	17.0	17.4	20.0	20.1	17.5	16.6	16.2	17.4	18.5	17.0	16.1	16.2	14.1	15.6	16.5	15.3	14.0	14.0	15.1	15.1	14.3	12.2	12.3	10.9	10.9	11.8	12.6	13.9
	Min.	15.8	15.7	14.6	15.1	14.9	15.7	15.0	12.7	13.3	12.5	14.6	14.7	13.4	13.1	13.1	11.9	11.3	12.3	12.9	13.1	11.8	12.9	12.1	11.6	10.7	10.4	9.9	9.4	10.1	11.1
1998	Max.	18.5	17.1	15.4	14.1	14.0	13.7	12.9	13.4	13.8	13.6	14.6	15.9	15.2	15.1	13.9	13.4	13.4	13.8	13.4	14.3	12.7	12.9	13.3	13.9	13.4	12.5	11.8	11.8	12.3	12.9
	Min.	14.9	14.3	13.7	13.8	12.9	12.2	12.6	12.6	13.3	13.5	13.4	13.6	14.0	12.9	13.1	12.1	11.9	11.0	11.9	11.1	11.9	12.3	12.3	11.9	11.1	10.7	10.4	10.9	10.8	11.1
1999	Max.	22.4	22.9	19.6	18.0	19.0	18.1	18.6	17.9	17.9	18.7	18.5	21.5	20.4	20.6	19.8	19.6	18.3	17.5	17.6	15.9	17.1	18.3	17.0	18.0	16.7	14.9	15.6	15.9	16.4	15.2
	Min.	15.1	15.8	15.2	13.6	16.3	15.5	15.9	15.6	15.3	16.8	17.1	16.4	16.0	14.8	17.8	17.6	17.5	15.6	13.9	13.8	14.6	15.6	14.9	15.3	14.8	13.6	12.6	11.6	12.9	12.3
2000	Max.	18.5	19.0	16.7	19.2	18.5	18.4	18.3	17.8	17.8	16.0	18.1	18.3	19.4	20.8	20.3	19.3	17.3	16.9	17.8	17.8	17.5	18.3	17.0	14.5						
	Min.	16.8	15.4	14.7	13.8	15.6	13.8	13.4	13.8	14.8	13.9	12.4	13.8	14.1	15.6	17.1	15.8	16.3	15.1	14.1	14.7	15.1	16.0	13.4	12.6						

Appendix 4g. Maximum and minimum water temperatures (°C) measured at the counting fence in Northeast Brook, Trepassey for the month of October, 1984-2000.

Year		Date																												
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1984	Max.																															
	Min.																															
1985	Max.																															
	Min.																															
1986	Max.																															
	Min.																															
1987	Max.	13.0	14.8	13.2																												
	Min.	12.1	12.6	10.0																												
1988	Max.																															
	Min.																															
1989	Max.	11.7	12.9	12.1	12.1	12.0	12.1	11.7	11.3	10.9	10.7	9.8	9.3	10.1	10.1	9.7	9.6	9.4	9.0	9.1	9.4	8.9	9.3	8.9	8.4							
	Min.	9.7	10.4	11.1	10.9	10.7	10.1	10.9	10.4	10.1	9.8	9.3	8.5	8.6	8.6	8.4	8.5	8.1	7.7	6.6	6.6	7.6	8.1	7.3	7.2							
1990	Max.	13.8	13.3																													
	Min.	12.0	12.3																													
1991	Max.	11.1	12.5	12.1	12.4	11.9	11.4	11.9	11.9	11.0	11.0	10.6	10.6	11.1	10.6	10.1	10.4															
	Min.	10.8	10.9	11.9	11.4	11.0	11.0	11.4	10.7	9.9	9.4	10.0	10.1	10.6	9.4	9.1	8.5															
1992	Max.																															
	Min.																															
1993	Max.	13.2	11.9	12.6	12.1	12.2	11.6	11.6	11.6	10.9	10.9	10.6	9.6	10.5	9.8	10.1																
	Min.	11.7	10.9	11.3	11.1	10.6	9.6	10.2	9.3	10.1	9.9	9.1	8.9	8.9	8.3	7.6																
1994	Max.	13.5	12.9	13.1	12.9	13.1	13.4	13.6	14.2	13.9	13.3	12.8	10.5	10.1	9.4	9.9	9.6	8.9	9.7	9.2	9.6	8.4	9.3	8.9	9.6							
	Min.	12.1	11.1	10.9	10.5	10.6	10.9	10.6	11.0	11.9	12.4	10.6	9.0	9.1	8.4	8.3	8.3	8.1	8.6	8.1	7.6	7.3	7.6	8.3	8.6							
1995	Max.																															
	Min.																															
1996	Max.	13.1	12.8																													
	Min.	11.1	10.4																													
1998	Max.	12.4	12.1	11.9	11.4	9.9																										
	Min.	12.0	11.1	10.4	9.9	9.5																										
1999	Max.	14.2	15.4	14.9	13.9	12.9	13.0	12.6	12.0	11.4	11.6	11.4	11.5	10.9	11.0	9.9	9.6	9.6	9.4	8.6	7.8	8.3	6.9	7.8	8.5	8.1	7.3					
	Min.	12.4	11.8	11.9	12.7	12.2	12.1	11.4	10.5	10.9	10.8	10.5	9.7	9.1	9.9	8.6	8.6	9.0	8.7	7.8	7.2	6.8	6.2	6.6	7.7	7.0	6.9					
2000	Max.																															
	Min.																															

Appendix 5a. Maximum and minimum water temperatures (°C) measured at the fishway in Northeast River, Placentia for the month of June, 1984-2000.

Year		Date																										
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1984	Max.																				18.0	18.0	17.0	13.8	13.8	19.1	20.1	18.0	15.9	19.6	20.1
	Min.																				18.0	15.9	12.8	12.8	12.8	11.2	12.8	13.8	14.9	13.8	15.9
1985	Max.																														
	Min.																														
1987	Max.															14.4	15.8	18.5	16.5	19.3	16.8	19.1	19.1	20.7	20.7	17.5	18.0	19.6	18.5	18.1	20.3
	Min.															11.1	11.2	11.2	12.9	10.9	12.4	13.3	12.6	12.3	14.2	14.0	12.2	12.3	12.8	12.9	13.7
1988	Max.																18.3	17.2	14.8	16.5	18.5	18.0	18.1	16.4	17.6	15.9	14.3	14.4	16.8	17.1	14.9
	Min.																12.4	13.7	13.0	12.7	13.9	14.7	14.8	14.3	14.6	14.1	13.3	12.5	14.4	14.5	14.2
1989	Max.																19.2	21.3	18.6	15.8	16.4	19.6	17.9	17.8	21.0	23.1	20.7	23.2	22.7	18.8	21.6
	Min.																11.1	12.4	13.9	14.5	14.3	15.0	15.0	14.2	14.7	17.3	16.9	16.2	18.9	17.0	15.0
1990	Max.															18.0	18.0	17.0	13.8	13.8	19.1	20.1	18.0	15.9	19.6	20.1					
	Min.															18.0	15.9	12.8	12.8	12.8	11.2	12.8	13.8	14.9	13.8	15.9					
1991	Max.									13.4	17.0	17.7	14.8	17.1	14.3	15.9	18.0	19.5	15.0	19.3	21.3	16.9	19.8	22.4	17.5	20.1	22.3	24.4	19.7	14.7	16.0
	Min.									11.2	9.7	12.2	12.4	12.4	11.6	9.9	9.5	10.3	10.9	11.6	13.9	12.0	9.7	11.7	12.6	9.6	11.4	14.9	14.8	12.4	10.2
1992	Max.															19.2	17.4	17.0	13.4	16.4	16.9	20.6	18.0	19.3	20.9	21.5	18.0	16.9	20.5	18.4	20.4
	Min.															18.0	15.3	13.5	9.3	9.9	11.9	12.1	13.7	13.4	14.8	14.8	15.1	14.3	13.9	14.7	11.9
1993	Max.													15.2	19.5	14.6	21.4	22.1	20.0	20.0	20.3	18.3	15.8	11.6	14.4	16.4	15.6	18.0	15.7	15.1	14.6
	Min.													13.2	9.4	11.5	11.4	14.4	15.3	14.4	12.1	12.3	11.9	9.1	8.2	10.9	12.0	12.4	15.1	14.0	13.1
1994	Max.												19.4	20.6	16.5	21.3	17.6	21.4	19.6	20.1	22.4	17.9	21.8	21.5	21.6	21.0	22.0	20.5	17.0	17.8	22.8
	Min.												16.8	13.4	13.9	14.3	15.2	14.1	14.7	11.8	13.4	14.2	13.8	14.5	14.6	13.7	13.4	13.1	13.7	15.1	15.3
1995	Max.												16.5	15.6	15.3	17.3	18.5	17.1	15.9	18.4	18.5	20.1	19.3	22.2	18.8	16.6	18.4	17.8	19.5	19.0	15.8
	Min.												14.2	12.6	13.4	13.9	13.8	13.1	13.6	13.1	12.6	13.4	13.9	14.6	15.4	14.4	11.1	11.4	12.9	12.7	12.1
1996	Max.																				17.2	14.2	15.2	19.0	21.0	22.6	17.8	13.6	20.4	19.6	21.8
	Min.																				13.4	10.9	10.4	10.6	11.1	12.6	13.6	12.6	11.4	12.4	14.2
1997	Max.											18.3	14.4	14.6	15.1	17.9	19.2	17.5	17.9	16.8	19.9	17.4	15.1	13.7	15.6	19.0	17.1	18.0	20.5	21.5	22.5
	Min.											13.7	11.4	11.8	11.5	11.2	11.9	14.9	15.2	13.9	13.7	14.9	13.6	12.4	10.9	8.7	9.8	12.9	13.9	15.4	16.0
1998	Max.											16.5	18.7	20.3	21.6	23.0	22.5	21.8	21.4	21.3	19.3	20.4	22.5	23.0	23.2	23.0	19.5	17.4	19.9	21.1	19.0
	Min.											12.4	10.9	12.4	12.4	13.4	15.0	15.8	16.8	17.1	14.7	11.9	13.7	13.9	15.9	17.0	14.9	11.4	10.4	12.3	15.4
1999	Max.	18.6	18.0	17.0	19.0	20.0	14.1	16.0	17.5	17.8	19.5	21.1	22.5	25.5	19.4	22.8	17.5	16.1	14.4	20.3	21.0	21.8	22.8	21.4	20.1	22.5	20.6	23.3	18.5	17.3	23.9
	Min.	14.6	12.4	14.9	11.4	11.8	12.3	11.6	10.1	10.6	11.6	12.2	14.8	15.5	17.1	16.7	13.6	14.1	12.9	12.0	13.9	14.9	16.2	17.3	15.6	15.4	17.1	15.4	15.9	15.6	16.1
2000	Max.								16.5	17.1	15.3	16.1	16.0	16.9	19.3	17.5	15.4	20.6	22.4	18.4	21.8	22.9	22.5	20.8	24.0	23.9	18.9	22.5	18.5	23.9	19.4
	Min.								14.6	11.6	11.9	13.9	12.8	13.4	12.1	12.4	12.9	13.6	14.4	14.8	13.1	14.1	15.1	16.3	15.4	14.4	15.9	13.7	15.3	14.8	16.1

Appendix 5b. Maximum and minimum water temperatures (°C) measured at the fishway in Northeast River, Placentia for the month of July, 1984-2000.

Year		Date																													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1984	Max.	23.2	22.2	21.2	19.1	22.2	20.1	24.3	24.3	24.3	25.3	23.2	25.3	22.2	26.4	23.2	23.2	21.2	24.3	22.2	24.3	26.4	23.2	24.3	22.2	23.2	24.3	24.3	21.2	20.1	25.3	25.3
	Min.	17.5	18.0	15.9	16.5	17.0	18.0	17.0	20.1	21.2	21.2	20.1	20.1	19.1	18.0	19.1	17.0	18.5	18.0	18.0	19.1	19.6	19.6	18.0	18.5	17.0	17.5	18.5	18.5	18.5	17.0	18.0
1985	Max.	17.8	18.8	21.0	21.0	22.1	24.8	21.0	19.4	17.8	20.5	18.8	18.8	21.0	22.1	19.9	17.8	17.8	18.8	18.3	16.7	19.9	19.9	18.8	19.9	19.9	20.5	18.8	21.0	21.0	18.8	21.5
	Min.	11.3	12.4	14.5	15.6	16.1	16.7	17.8	17.8	16.7	16.7	17.8	18.8	17.8	17.8	18.3	17.2	17.2	16.7	16.7	16.7	15.6	16.1	17.2	16.7	16.7	16.7	17.8	17.2	16.7	16.7	16.7
1987	Max.	18.3	22.2	20.8	20.4	18.1	12.8	19.1	25.0	24.6	24.8	22.3	25.9	24.6	25.1	23.7	22.2	23.0	25.5	20.7	24.3	22.0	22.5	23.9	25.5	20.9	17.3	24.5	21.8	24.5	25.6	25.5
	Min.	13.1	12.0	12.0	11.5	13.0	10.0	8.6	14.6	17.5	17.9	16.8	16.3	20.1	20.5	19.7	20.0	18.3	15.8	16.3	13.9	14.3	12.2	12.0	15.6	17.2	15.9	17.9	15.9	16.4	17.1	18.3
1988	Max.	16.5	16.5	16.7	18.4	17.7	19.1	16.9	17.8	16.7	18.7	17.2	18.1	16.7	16.6	17.1	18.0	15.3	18.3	19.9	16.8	19.3	16.0	19.9	19.5	16.5	15.5	17.7	18.1	19.3	21.3	21.5
	Min.	14.6	15.2	16.0	14.6	15.3	15.5	16.1	15.7	15.6	16.1	15.9	16.1	16.2	13.9	14.2	14.9	14.2	14.5	15.4	16.2	14.6	15.4	14.6	15.4	15.5	13.6	13.4	14.6	15.7	16.9	18.0
1989	Max.	19.3	20.1	18.3	22.2	21.3	20.6	18.8	18.1	16.3	19.9	19.3	19.1	19.3	21.2	18.2	21.7	20.8	18.9	22.3	20.8	22.8	19.2	21.2	22.5	19.8	21.4	23.6	23.1	21.1	22.4	23.0
	Min.	14.9	14.3	14.2	13.6	14.6	16.2	16.0	16.2	15.4	15.5	17.8	17.1	16.7	16.7	15.6	15.8	15.9	17.6	17.0	17.2	16.5	16.6	15.2	15.7	17.3	15.6	17.1	18.7	19.9	18.8	17.7
1990	Max.	23.2	22.2	21.2	19.1	22.2	20.1	24.3	24.3	24.3	25.3	23.2	25.3	22.2	26.4	23.2	23.2	21.2	24.3	22.2	24.3	26.4	23.2	24.3	22.2	23.2	24.3	24.3	21.2	20.1	25.3	25.3
	Min.	17.5	18.0	15.9	16.5	17.0	18.0	17.0	20.1	21.2	21.2	20.1	20.1	19.1	18.0	19.1	17.0	18.5	18.0	18.0	19.1	19.6	19.6	18.0	18.5	17.0	17.5	18.5	18.5	18.5	17.0	18.0
1991	Max.	16.4	19.1	18.7	23.0	24.0	20.8	21.7	17.5	21.7	23.4	21.3	24.6	19.2	17.8	23.5	23.0	19.1	19.8	25.0	25.0	20.6	21.3	17.5	24.1	24.1	20.1	20.9	24.5	24.8	25.3	20.2
	Min.	11.2	11.1	10.8	11.8	13.3	14.8	14.1	14.1	13.0	13.9	14.4	14.2	14.5	12.8	14.6	14.8	15.5	15.1	14.6	17.1	14.9	14.1	14.1	15.8	16.5	17.3	16.5	16.1	15.6	15.6	16.1
1992	Max.	16.5	15.6	13.1	13.2	18.2	14.5	12.9	15.9	18.9	16.3	15.3	15.7	16.9	19.1	17.1	18.8	17.1	20.0	17.0	20.2	20.9	20.5	21.2	20.3	22.3	21.4	22.6	19.9	20.5	23.4	23.4
	Min.	13.4	11.6	10.5	9.9	8.4	11.9	11.9	12.6	13.1	13.8	13.1	14.1	13.3	13.9	14.4	14.1	14.3	12.7	14.2	13.7	15.3	16.8	14.4	15.0	15.0	15.1	15.6	15.9	15.8	16.5	17.1
1993	Max.	18.1	19.8	17.5	16.0	15.6	17.0	18.3	17.4	16.8	19.4	18.5	22.1	19.1	19.5	17.5	17.2	17.1	17.1	18.1	21.2	18.0	18.9	17.0	16.4	18.5	20.7	21.2	18.8	22.0	19.9	18.6
	Min.	13.1	13.9	15.0	14.3	13.8	13.1	13.9	15.7	14.6	14.6	16.0	15.8	16.5	15.7	15.3	14.6	15.5	15.1	14.4	14.2	15.8	14.6	15.9	15.3	13.1	14.8	15.1	15.6	16.4	17.6	15.8
1994	Max.	22.1	20.5	23.3	22.0	18.5	20.1	23.1	23.9	19.1	18.4	24.0	26.4	22.8	24.9	20.7	21.8	23.3	21.6	19.9	22.5	20.2	19.4	19.1	18.1	21.2	21.2	20.5	21.0	23.0	24.6	25.1
	Min.	17.3	17.9	16.3	14.8	15.2	14.5	13.9	15.3	16.0	15.6	15.6	15.6	17.7	16.4	16.0	15.6	15.1	15.4	17.0	16.4	17.0	17.1	17.1	15.5	16.5	18.2	19.2	19.0	18.8	16.9	19.5
1995	Max.	14.5	16.1	20.0	21.6	22.0	23.4	25.1	25.9	22.6	20.0	24.9	26.0	21.4	23.5	19.6	17.5	20.8	15.9	14.9	19.4	17.4	20.9	18.8	20.9	22.0	19.6	20.8	22.1	18.4	22.5	20.0
	Min.	12.1	13.6	14.0	13.4	15.7	14.6	15.8	17.4	18.8	17.5	17.8	16.9	17.3	15.4	15.3	12.9	11.5	12.4	11.9	13.4	15.8	14.7	16.3	16.2	16.4	17.6	15.9	15.6	15.4	16.1	17.0
1996	Max.	18.4	15.9	18.5	18.8	18.4	20.1	17.8	19.9	21.1	18.6	18.8	21.9	23.1	20.0	20.0	18.1	18.4	20.1	20.8	20.5	19.7	19.2	19.5	20.4	19.8	23.0	22.2	22.5	19.6	23.1	22.6
	Min.	15.5	14.4	14.4	17.0	17.5	17.1	16.2	14.6	16.4	16.5	16.5	15.4	16.3	16.2	15.2	15.9	15.8	16.1	16.6	17.2	18.4	17.5	16.4	16.4	16.6	17.5	18.4	18.0	17.5	17.0	17.5
1997	Max.	22.5	20.4	23.0	20.0	22.4	21.3	25.3	24.6	24.8	20.8	23.2	22.8	23.1	19.1	21.1	19.6	24.1	25.0	23.3	20.4	22.1	24.6	23.8	22.7	23.1	21.2	17.1	18.1	20.4	23.0	24.1
	Min.	17.7	14.1	16.8	17.9	15.5	15.4	16.3	17.0	18.9	17.2	15.8	16.6	17.0	15.8	12.9	14.6	15.7	17.0	18.0	16.0	15.5	15.2	15.9	15.3	14.7	14.9	14.4	14.9	14.7	13.8	15.4
1998	Max.	18.3	20.6	23.5	19.8	18.3	20.5	22.8	19.4	17.1	16.0	15.4	16.7	20.3	21.7	24.0	24.7	21.5	22.6	23.1	20.1	22.0	22.1	20.4	21.3	23.1	24.1	24.3	25.0	23.8	22.3	21.5
	Min.	14.8	15.1	14.6	16.0	15.8	15.9	16.0	15.4	15.1	12.9	13.9	14.4	14.4	15.3	16.6	18.3	19.9	17.5	17.8	18.5	18.1	18.3	16.8	18.8	16.8	18.6	17.8	19.4	18.9	20.3	19.1
1999	Max.	23.9	22.0	19.7	17.6	19.7	18.9	24.1	22.4	23.7	23.3	22.3	25.8	19.5	23.1	22.7	23.2	22.3	20.7	21.4	19.6	23.9	23.8	21.8	26.8	24.7	21.2	19.7	23.0	21.4	25.5	23.4
	Min.	15.9	17.4	15.8	15.5	14.2	13.9	15.8	17.4	16.1	17.4	17.8	16.9	15.3	14.8	16.9	17.0	18.3	16.8	17.2	15.2	14.4	16.4	17.4	18.0	19.5	18.4	16.6	16.9	18.7	19.1	19.9
2000	Max.	20.9	23.9	24.0	26.5	23.1	23.8	19.0	22.0	22.0	22.2	19.5	22.8	19.8	22.2	23.9	24.4	24.9	20.9	23.0	23.6	24.0	24.8	22.1	22.1	20.2	23.0	20.0	19.3	22.5	19.0	16.7
	Min.	15.4	15.3	16.5	17.3	18.2	18.0	15.9	16.5	17.8	17.3	17.9	17.2	17.0	15.1	15.4	16.5	17.7	18.1	18.5	17.0	16.9	17.0	17.4	16.8	17.6	17.3	17.5	17.0	15.0	16.3	15.3

Appendix 5c. Maximum and minimum water temperatures (°C) measured at the fishway in Northeast River, Placentia for the month of August, 1984-2000.

Year		Date																												
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1984	Max.	23.2	21.2	24.3	26.4	24.3	25.3	26.4	27.4	25.3	25.3	21.2	21.2	19.6	23.2	25.3	24.3	24.3	23.2	20.6	21.2	21.2	22.2	23.8	22.2	21.2	20.1	20.1	20.1	21.7	21.2	20.1
	Min.	18.0	20.1	18.0	17.5	20.1	19.6	20.1	21.2	21.2	14.9	18.5	19.1	17.0	19.6	18.0	17.0	20.1	22.2	19.6	20.1	20.1	18.0	19.1	20.1	18.5	18.0	18.0	19.1	19.1	19.1	19.1
1985	Max.	18.8	17.8	19.4	17.8	21.5	21.0	19.9	21.0	23.1	23.1	24.8	23.1	21.0	19.9	21.0	18.8	19.9	17.8	21.0	18.8	18.8	18.3	17.8	17.8	21.0	22.1	20.5	16.7	14.5	14.5	14.5
	Min.	16.7	14.5	13.5	15.6	14.5	16.7	17.8	16.7	18.8	18.8	19.9	19.9	18.8	17.2	15.6	15.1	15.1	15.6	14.5	15.6	15.6	15.6	15.6	14.5	14.5	15.6	16.1	13.5	13.5	12.9	11.8
1987	Max.	21.9	21.0	19.3	19.3	22.5	22.6	23.8	22.3	23.0	22.7	23.7	18.1	13.8	19.8	18.5	17.7	18.5	18.7	23.8	23.6	20.3	23.3	19.8	19.8	17.8	18.7	19.3	19.5	15.2		
	Min.	18.5	17.8	17.0	15.4	16.5	16.3	14.5	14.3	13.7	15.1	14.8	12.9	10.9	9.7	13.9	13.8	13.0	12.5	14.3	16.4	16.1	14.5	13.6	15.3	12.8	12.3	12.3	11.7	11.8		
1988	Max.	22.2	19.3	21.2	21.2	22.6	19.9	17.4	18.4	20.6	19.4	22.8	21.4	23.7	17.9	19.4	18.8	19.6	15.3	18.4	18.0	19.2	17.9	16.6	19.5	21.1	21.8	19.4	19.6	17.5	18.7	16.9
	Min.	18.0	17.6	16.0	14.6	16.5	15.0	14.4	16.5	17.4	17.6	17.2	15.7	17.9	14.0	11.7	14.5	13.4	13.7	14.3	14.3	14.0	15.8	13.3	13.0	13.2	13.8	13.4	16.7	16.0	16.6	15.9
1989	Max.	24.3	24.5	25.1	24.1	20.7	20.8	19.5	20.0	20.2	21.9	23.1	23.6	20.4	19.1	22.2	22.3	22.7	21.1	21.4	22.5	19.1	20.7	20.3	19.6	18.1	17.3	17.0	16.2	18.8	18.8	16.2
	Min.	16.9	17.0	16.5	16.7	17.3	19.5	19.2	19.5	18.8	17.7	18.8	19.0	19.0	17.7	18.5	19.6	20.1	18.7	16.8	17.2	17.8	18.4	18.9	17.8	16.9	15.6	14.4	14.2	12.9	15.0	15.7
1990	Max.	23.2	21.2	24.3	26.4	24.3	25.3	26.4	27.4	25.3	25.3	21.2	21.2	19.6	23.2	25.3	24.3	24.3	23.2	20.6	21.2	21.2	22.2	23.8	22.2	21.2	20.1	20.1	20.1	21.7	21.2	20.1
	Min.	18.0	20.1	18.0	17.5	20.1	19.6	20.1	21.2	21.2	14.9	18.5	19.1	17.0	19.6	18.0	17.0	20.1	22.2	19.6	20.1	20.1	18.0	19.1	20.1	18.5	18.0	18.0	19.1	19.1	19.1	19.1
1991	Max.	17.6	16.0	14.4	14.9	15.0	18.0	20.0	23.0	22.4	17.6	19.5	23.0	23.5	24.8	21.0	23.7	25.0	24.0	19.0	20.1	17.4	18.6	17.6	20.3	19.7	17.9	21.1	20.9	19.3	17.3	17.1
	Min.	14.9	13.9	11.6	12.1	11.9	12.1	12.3	13.5	12.9	13.9	14.6	15.6	15.8	16.9	17.1	16.0	17.1	18.0	15.1	14.9	15.8	17.1	15.3	12.1	13.1	15.1	12.9	14.4	15.4	15.9	12.9
1992	Max.	20.3	17.5	21.4	18.1	19.4	21.6	22.8	23.0	23.5	23.7	19.2	18.6	22.2	18.1	22.5	22.9	18.0	21.9	19.3	21.4	20.1	18.0	17.5	15.4	17.3	19.3	14.8	15.6			
	Min.	16.0	15.3	12.9	14.4	16.0	16.4	14.5	14.7	15.4	15.3	17.8	16.8	14.7	14.4	14.6	13.9	15.7	15.9	17.9	16.3	17.4	16.1	12.8	13.1	14.6	11.9	12.5	14.5			
1993	Max.	22.5	22.4	20.5	23.3	21.4	23.1	20.8	19.5	20.4	21.9	20.8	20.4	19.9	18.2	19.8	21.0	22.7	22.0	22.1	19.1	18.5	21.0	22.0	19.5	18.7	17.1	18.1	18.9	19.2	18.4	14.8
	Min.	17.5	19.3	18.9	19.0	19.9	18.8	18.0	16.0	14.9	15.7	15.6	17.4	16.1	15.9	15.5	14.2	14.4	15.9	14.9	17.4	17.1	13.6	15.4	16.9	16.3	14.6	12.9	14.1	13.0	12.3	12.1
1994	Max.	22.4	20.6	21.0	23.5	22.0	23.5	22.4	21.6	21.4	23.5	22.4	21.4	21.4	20.7	22.0	22.0	19.5	22.7	22.1	20.0	19.0	18.4	22.2	22.0	22.1	22.9	19.7	21.4	22.4	19.3	19.5
	Min.	19.3	17.1	16.0	17.5	19.2	20.5	20.6	19.8	19.5	18.9	17.9	16.0	17.7	19.7	18.0	15.7	16.5	16.1	15.9	17.3	18.0	17.0	14.6	14.9	15.1	17.4	18.0	18.0	18.8	15.6	13.1
1995	Max.	21.6	20.9	23.2	21.6	23.6	23.2	23.3	24.6	25.4	25.5	25.1	22.6	21.0	22.4	19.0	24.4	20.3	20.9	21.8	22.5	24.9	20.0	15.7	16.6	18.3	16.9	16.1	20.4	17.3	15.1	13.6
	Min.	16.3	13.1	14.1	14.5	14.9	16.1	16.6	16.4	16.8	16.9	18.0	19.6	17.0	14.2	14.5	17.4	15.9	11.9	13.7	15.6	19.3	15.6	13.3	13.5	14.6	15.1	13.8	12.3	13.6	12.7	12.7
1996	Max.	23.3	20.4	21.2	23.5	23.6	26.9	26.8	26.1	21.4	20.6	21.2	24.1	22.4	19.7	22.8	24.1	21.0	23.0	22.0	19.4	22.4	24.5	24.2	20.3	20.5	21.2	22.6	22.0	19.4	18.0	19.0
	Min.	18.0	18.1	18.4	17.9	18.6	18.0	19.2	19.5	18.4	17.9	17.3	18.4	17.2	18.3	17.4	16.8	18.2	18.2	18.8	15.4	14.1	16.4	16.3	17.5	17.2	15.9	15.9	17.5	16.1	15.4	15.6
1997	Max.	19.4	21.5	23.4	21.1	21.1	23.7	24.5	23.1	24.7	23.8	26.3	20.8	19.8	18.0	21.5	18.8	20.5	16.9	15.6	21.8	22.0	18.4	21.8	22.1	21.3	23.5	24.3	19.7	17.5	16.5	17.9
	Min.	16.5	16.4	17.3	17.2	18.0	18.3	15.4	16.0	18.0	17.9	17.6	18.0	16.0	16.3	15.3	16.5	16.5	13.8	12.1	10.2	13.0	14.4	15.4	17.0	17.5	17.3	17.0	17.3	15.1	15.1	13.6
1998	Max.	23.9	23.5	25.5	25.9	25.8	25.2	25.8	24.5	25.7	25.7	26.3	23.9	21.0	23.9	22.5	26.4	23.0	19.7	22.5	22.1	22.4	23.0	22.3	20.3	18.2	17.9	19.5	20.3	18.5	17.0	20.0
	Min.	17.1	17.1	18.3	17.0	17.9	18.2	18.1	18.5	19.1	19.9	20.7	21.1	18.3	15.9	18.0	18.0	17.6	18.6	18.3	17.5	16.8	17.6	16.5	17.5	17.6	17.3	16.5	16.6	16.3	15.6	16.3
1999	Max.	21.1	25.8	25.1	25.4	20.5	21.6	23.4	20.0	22.4	23.5	25.0	19.1	19.9	20.2	21.8	23.0	24.6	20.8	18.8	23.6	20.2	19.3	24.9	22.5	24.6	23.2	22.0	20.5	20.0	17.8	21.9
	Min.	19.2	18.4	17.4	18.0	18.7	17.9	17.5	16.9	16.0	16.1	15.6	17.3	17.5	18.9	18.3	17.0	17.6	18.6	15.1	12.9	15.9	16.3	15.9	15.7	17.3	15.9	17.4	19.3	17.0	14.4	12.4
2000	Max.	20.8	24.6	25.0	22.7	21.5	25.3	25.0	20.5	19.5	18.1	21.6	20.6	24.1	24.3	24.0	25.2	27.1	23.0	21.8	22.3	23.5	22.4	22.1	22.3	19.9	21.9	21.5	21.0	19.0	20.4	19.0
	Min.	14.4	14.8	17.0	17.5	18.5	17.4	17.6	18.0	18.5	16.5	17.2	16.4	14.7	15.3	18.4	19.8	20.9	18.4	19.2	20.0	20.5	19.0	18.2	17.5	18.4	17.5	18.8	18.3	16.8	15.8	16.8

Appendix 5d. Maximum and minimum water temperatures (°C) measured at the fishway in Northeast River, Placentia for the month of September, 1984-2000.

Year		Date																											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1984	Max.	20.1	20.1	18.0	17.0																										
	Min.	19.1	19.1	15.9	15.9																										
1985	Max.	13.5	12.4	13.5	13.5	15.1	14.0																								
	Min.	11.3	10.2	11.3	11.3	12.4	12.9																								
1987	Max.																														
	Min.																														
1988	Max.	20.0																													
	Min.	13.7																													
1989	Max.																														
	Min.																														
1990	Max.	20.1	20.1	18.0	17.0																										
	Min.	19.1	19.1	15.9	15.9																										
1991	Max.	13.4	14.9	19.0	20.4	18.1	19.1	17.5	17.4	16.2	17.5	13.9	13.8	13.9	14.0	16.0	14.3	18.9	15.1												
	Min.	10.7	9.4	11.8	14.2	15.8	16.0	15.5	14.2	11.7	12.3	11.9	11.6	11.4	10.3	10.4	12.6	13.8	11.6												
1992	Max.																														
	Min.																														
1993	Max.	20.8	16.1																												
	Min.	11.6	11.4																												
1994	Max.	16.5																													
	Min.	15.3																													
1995	Max.																														
	Min.																														
1996	Max.	19.5	17.5	18.0	17.1	20.3	18.0																								
	Min.	16.5	16.0	14.5	15.8	15.2	15.4																								
1997	Max.	19.6	18.5	16.5	16.4	18.5	17.0	20.5	17.2	15.3	15.6	17.5	18.5	16.5	17.0	15.9	18.4	15.6	17.5	17.0	18.4	17.0	15.0	14.6	13.8	11.9					
	Min.	13.3	15.9	15.1	15.6	14.5	15.4	16.0	15.4	14.2	13.8	13.6	14.3	15.6	15.3	15.1	13.6	13.9	13.6	15.1	15.9	13.4	12.8	12.6	10.6	10.6					
1998	Max.	21.9	18.8	14.4																											
	Min.	16.0	14.6	13.1																											
1999	Max.	24.5	17.8																												
	Min.	15.4	16.0																												
2000	Max.	18.9	18.5	16.1	16.4	17.1	17.1	17.5	15.1																						
	Min.	17.6	15.6	14.6	13.4	14.8	13.3	12.6	13.6																						

Appendix 6. Mean daily water levels (cm) measured near the fishway in Middle Brook, 1983-2000.

Month	Day	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
June	2																32.5	33.5	
	3																32.0	32.8	
	4																31.5	32.7	
	5																31.8	33.3	20.0
	6														17.3		31.3	34.0	19.0
	7														32.0		31.8	34.3	19.2
	8														32.5		32.3	33.5	22.3
	9						51.5								35.0		33.5	32.8	22.8
	10						51.5								34.3		33.2	31.8	23.2
	11									35.0						36.5	33.2	30.8	22.8
	12							15.5	30.0	36.0				23.0	32.5	36.8	32.3	29.7	21.8
	13						55.3	15.3	28.8	37.5			39.0	22.3	31.3	36.0	31.2	28.8	19.7
	14						53.5	14.8	27.5	39.3			38.3	23.0	31.2		30.5	28.2	18.8
	15		46.5			25.5	52.0	13.7	26.3	39.8		22.8	38.8	26.7	30.2		31.0	27.3	17.8
	16		46.9		26.3	25.7	49.0	12.8	25.3	40.0	36.5	22.3	38.8	29.3	29.2	38.0	28.2	26.3	19.2
	17		46.2	30.5	24.8	28.8	47.0	11.5	29.0	39.0	38.8	21.5	37.8	28.8	29.2	37.2	29.0	26.0	21.0
	18		45.2	31.3	24.5	28.8		11.5	28.3	38.3	40.8	20.8	36.8	28.5	28.3	36.3	27.5	27.3	23.7
	19		44.6	30.5	23.3	27.8		14.0	27.7	37.3	41.8	19.7	35.5	28.7	27.0	35.7	26.5	29.5	23.3
	20	25.9	42.0	30.0	22.5	27.5	45.0	10.8	28.2	36.3	40.7	20.3	34.0	28.3	28.0	34.8	25.3	29.8	22.0
	21	24.9	40.0	30.7	21.5	26.0	43.2	11.2	35.8	35.0	39.8	22.7	33.0	27.3	30.0	33.8	27.3	29.2	19.7
	22	23.4	38.0	31.5	20.3	25.8	41.8	12.3	37.8	32.8	39.0	23.8	32.2	26.3	30.8	34.7	27.7	28.3	18.8
	23	22.8	36.1	31.0	20.2	24.3	39.3	11.8	38.3	32.0	38.3	23.3	34.0	25.0	29.8	35.3	26.0	27.2	17.8
	24	21.0	34.1	29.0	19.7	23.3	37.3	10.8	37.3	30.7	37.2	26.2	34.3	23.0	28.5	36.3	24.5	26.2	17.3
	25	20.4	32.5	28.3	18.8	23.3	34.5	10.0	37.8	28.2	36.3	28.5	34.3	23.7	27.0	35.3	22.5	24.5	20.0
	26	18.3	31.3	28.0	17.8	21.3		10.5	37.3	26.8	35.5	30.3	33.8	26.7	26.2	34.0	20.4	22.5	19.3
	27	16.8	30.3	27.3	17.0	19.5		9.8	36.5	25.7	34.8	31.2	33.8	28.3	29.0	32.0	19.8	22.2	18.0
	28	14.9	30.8	26.8	15.8	19.7	30.7	9.0	35.0	24.8	33.2	30.3	33.0	27.3		30.0	20.0	21.7	17.3
	29	34.5	29.5	26.0	16.3	17.3	30.5	8.5	33.8	25.0	31.7	31.7	33.5	26.0	28.0	28.0	19.6	21.5	18.8
	30	32.3	28.0	31.5	16.2	16.1	34.5	8.3	32.8	26.0	30.3	33.5	33.2	24.8	26.7	26.5	17.8	21.0	19.2
July	1	31.0	26.8	31.7	18.2	16.1	36.3	7.9	32.3	24.3	30.8	35.3	32.3	25.5	24.7	24.3	16.8	20.3	18.8
	2	30.2	27.7	31.6	21.6	15.9	35.8	7.0	31.0	23.8	33.3	35.3	31.3	25.7	22.3	21.8	17.0	18.5	17.8
	3	30.8	27.3	30.8	21.0	14.4	37.3	6.0	29.3	24.3	33.7	34.3	30.0	27.8	21.8	21.8	16.9	16.3	17.0
	4	32.1	26.0	30.4	19.2	13.1	38.0	5.3	27.5	23.0	34.2	33.3	27.5	33.8	26.3	22.4	15.7	16.2	16.3
	5	31.3	23.9	30.0	20.2	13.0	35.8	6.0	26.3	21.5	34.5	35.3	26.2	33.5	28.8	21.8	15.3	16.5	16.0
	6	30.5	22.8	29.1	20.7	10.8	33.3	5.1	25.1	20.3	33.7	36.8	25.3	32.0	30.9	21.2	15.0	16.0	17.2
	7	29.6	21.4	27.5	21.3	10.5	31.2	4.3	22.5	22.3	34.5	36.5	26.0	30.5	32.6	19.8	14.3	14.2	16.3
	8	35.5	20.0	26.1	20.6	9.8	30.0	3.3	21.7	23.0	33.8	35.3		29.0	30.6	18.8	13.0	13.3	20.2
	9	35.3	17.6	27.2	21.7	9.3	28.9	5.0	20.9	22.3	32.6	34.4	24.2	26.7	28.8	18.7	12.0	11.7	21.8
	10	34.6	18.4	26.4	26.8	8.3	26.7	4.7	19.8	21.0	32.2	33.8	24.0	24.7	27.8	18.6	12.5	11.0	19.8
	11	34.5	19.3	25.8	30.2	7.3	24.9	3.8	19.6	20.0	32.3	34.0	24.9	23.3	29.1	18.4	13.3	11.5	19.8
	12	34.3	18.3	25.2	32.2	6.8	24.3	4.5	18.3	20.7	32.5	33.0	23.1	22.0	28.1	17.3	13.5	12.0	20.8
	13	33.8	17.3	24.2	34.2	5.8	23.6	4.0	17.5	19.8	31.8	30.9	21.3	21.1	26.4	18.0	13.2	10.8	20.0
	14	33.4	17.6	21.5	31.5	4.6	22.8	3.3	16.8	19.0	31.2	29.3	20.3	20.6	25.0	17.6	11.2	9.7	19.2
	15	33.1	18.9	20.2	31.9	3.8	21.8	7.0	17.0	19.0	30.3	28.3	19.6	18.9	36.1	18.3	10.3	11.5	19.0
	16	33.1	18.1	19.9	32.8	2.8	20.8	9.0	16.4	18.0	30.8	30.5	18.5	19.7	39.7	18.0	10.3	11.3	18.5
	17	33.9	19.5	19.9	31.8	1.8	19.8	9.5	15.1	16.5	30.0	34.9	19.5	20.5	41.7	15.7	9.7	10.7	17.8
	18	35.3	22.3	22.9	30.8	1.5	18.5	9.5	14.3	15.3	28.8	37.0	19.0	19.0	40.6	15.8	9.3	10.7	17.2
	19	34.4	21.3	32.6	30.2	1.8	16.8	9.2	12.8	14.5	29.2	37.0	17.4	17.8	39.1	16.0	10.2	10.5	17.8
	20	32.8	20.9	35.7	30.2	1.3	15.5	8.8	16.8	12.2	27.2	35.6	16.5	16.5	37.3	16.0	9.7	9.7	17.2
	21	31.7	19.5	39.0	30.0	0.1	14.3	8.4	16.5	10.7	25.5	34.3	16.0	16.3	35.2	15.7	8.8	8.8	16.5
	22	30.9	18.3	39.2	28.8	-0.8	13.3	8.2	17.0	12.3	24.7	33.5	16.5	16.6	31.8	14.8	8.3	8.0	16.0
	23	30.7	19.3	42.8	25.5	-1.8	12.0	8.0	16.4	13.8	24.0	32.8	19.2	17.1	30.4	14.3	8.2	7.3	16.0
	24	30.7	19.0	43.8	24.0	-2.5	10.8	8.0	18.0	12.4	23.2	32.4	26.4	16.9	28.9	13.0	8.0	7.0	18.0
	25	29.8	16.9	42.0	22.0	-3.8	10.1	7.3	25.5	11.0	22.0	35.4	28.3	19.5	27.4	11.3	8.0	6.8	17.8
	26	31.1	16.8	40.0	20.2	-4.2	9.3	6.7	29.6	9.5	21.0	37.1	31.3	19.3	26.3	10.2	8.0	6.5	16.7
	27	32.8	15.5	38.7	19.7	-4.8	8.3	6.1	28.9	8.0	21.0	35.8	30.3	19.1	26.2	9.6	7.3	7.0	15.3
	28	32.2	14.3	36.5	17.9	-5.8	7.3	5.6	26.8	7.0	20.5	34.7	29.7	18.9	26.7	9.5	6.3	8.0	14.3
	29	32.2	14.8	33.0	16.8	-6.6	7.3	5.0	26.0	6.5	21.0	34.5	28.8	18.1	25.3	9.0	5.3	8.8	14.0
	30	32.7	13.5	31.4	17.8	-7.8	6.5	4.8	24.9	5.5	23.2	35.0	27.5	17.8	25.5	8.1	5.0	8.8	13.5
	31	33.2	13.5	30.3	17.3	-8.5	5.7	4.3	23.5	4.0	24.3	35.3	26.0	16.1	24.0	7.0	5.0	7.0	13.0

Appendix 6(cont'd)

Month	Day	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
August	1	32.8	12.3	28.8	17.0	-9.4	5.2	3.0	21.5	2.8	23.7	38.0	23.8	14.8	23.1	5.4	5.5	6.0	12.5
	2	33.1	13.1	29.5	17.5	-9.0	4.2	2.3	20.3	4.5	31.3	43.1	23.0	14.9	22.4	4.0	5.8	6.0	11.3
	3	33.5	15.3	31.7	16.3	-9.5	2.5	1.5	19.3	5.8	36.3	43.1	23.8	14.9	21.3	3.9	5.3	5.3	10.2
	4	33.9	14.0	32.8	14.8	-13.8	1.8	0.6	18.3	7.5	35.5	41.7	26.2	13.2	20.0	3.7	5.0	4.5	9.7
	5	33.7	13.3	29.8	16.6	-11.5	1.8	0.1	17.8	9.0	35.5	39.7	28.8	12.5	18.2	4.3	4.3	4.7	8.8
	6	33.1	13.7	28.8	15.5	-12.8	1.3	1.8	16.8	10.0	35.0	43.2	27.5	12.1	16.5	4.8	3.8	3.8	7.8
	7	33.7	13.8	31.7	14.0	-13.8	0.7	2.0	15.8	10.8	33.5	43.8	28.8	11.5	14.9	9.0	3.3	3.5	6.7
	8	34.3	12.8	30.5	12.7	-15.3	0.8	4.2	14.3	9.8	32.2	43.3	35.4	9.2	13.6	9.5	3.0	4.0	6.5
	9	33.3	14.3	29.3	12.0	-17.3	0.2	4.8	12.5	8.5	30.7	42.5	37.0	8.0	11.5	9.1	2.9	4.5	7.0
	10	32.9	13.3	28.2	13.0	-20.0	0.8		11.0	7.5	28.0	41.3	36.2	6.8	10.2	9.2	1.8	4.3	7.7
	11	34.5	12.3	27.8	13.3	-22.0	2.3	4.4	9.8	6.7	26.3	39.8	35.8	5.8	9.5	9.8	1.3	4.0	10.0
	12	35.4	19.7	26.2	13.3	-23.3	1.0	3.4	9.2	8.0	25.2	37.6	34.4	4.8	7.8	9.8	1.0	3.5	11.0
	13	35.6	20.2	27.5	12.9	-24.0	-0.5	2.9	8.3	7.0	23.7	35.8	32.0	3.8	9.0	9.0	2.3	3.5	10.3
	14	36.6	19.5	28.2	11.8	-31.1	2.0	3.3	7.8	5.4	22.7	33.9	30.1	6.3	8.8	9.1	3.3	3.0	9.0
	15	36.7	18.0	27.3	11.0	-26.2	2.7	5.5	9.3	8.8	21.5	32.3	27.0	13.2	8.0		2.8	4.0	7.8
	16	39.7	16.8	25.0	9.7	-25.3	1.5	5.0	8.8	4.2	19.7	31.0	26.3	11.5	6.8	7.9	2.0	11.0	7.5
	17	40.5	17.3	24.3	9.0	-28.0	-0.5	5.0	7.8	3.8	18.0	30.0	25.5	10.0	5.5	8.0	2.3	17.0	6.3
	18	41.5	20.5	23.5	8.2	-30.5	-1.5	4.7	6.8	2.5	17.0	27.8	24.3	9.3	5.2	8.6	2.7	16.3	8.8
	19	42.6	25.7	21.3	7.7	-27.3	0.8	4.8	6.2	2.3	17.5	25.8	23.0	8.3	4.2	8.8	3.3	15.7	8.7
	20	43.1	26.2	20.3	6.8	-28.0	0.3	4.5	5.8	7.0	18.8	25.5	22.0	6.2	3.3	9.0	11.7	16.0	8.0
	21	43.7	26.5	20.2	6.2	-28.2	-0.5	3.2	5.0	12.0	18.0	23.5	22.2	4.7	2.0	8.6	11.3	17.0	8.8
	22	47.0	28.2	20.3	5.3	-26.3	-1.2	2.3	3.8	11.8	20.5	21.5	21.0	6.8	1.3	8.1	9.8	18.0	9.5
	23	47.1	27.5	20.2	4.3	-26.8	-0.7	2.0	3.0	10.5	22.0	19.5	19.7	5.8	0.8	7.3	11.3	20.0	9.3
	24	50.7	26.3	22.3	3.8	-26.2	-2.2	2.3	1.8	9.5	20.8	17.5	18.5	5.8	0.2	6.6	15.0	18.8	10.0
	25	51.4	38.5	20.2	3.5	-27.5	-2.7	3.0	1.8	8.8	19.7	16.0	16.3	7.0	-0.7	6.2	13.5	17.8	10.2
	26	50.9	47.7	19.0	4.8	-28.3	-3.3	2.8	1.2	8.0	18.7	14.5	14.5	9.5	-1.5	5.2	13.7	17.2	11.0
	27	50.3	49.3	19.5	6.0	-29.2	-4.2	2.8	0.3	7.3	17.7	15.5	13.0	12.5	-2.5	4.0	17.0	18.7	9.8
	28	50.7	51.0	18.3	6.3	-30.2	-4.8	2.5		5.8	17.0	15.8	11.8	15.0	-3.7	4.3	19.0	19.7	9.2
	29	50.8	50.2	17.3	7.5	-31.2	-5.7	1.8	-0.7	4.8		16.8	10.0	13.8	-4.3	3.3	21.7	19.3	8.8
	30	49.9	48.3	19.7	8.7	-31.7	-4.7	1.5	-1.7	5.5		16.2	9.0	12.7	-2.8	3.3	25.8	20.7	8.3
	31	49.3	46.0			-32.7	-5.7	2.0	-3.0	9.0		15.8	7.7		-2.8	6.3	27.2	22.7	7.5
September	1	48.6	44.5			-33.2	-6.7	2.5	-3.8	11.3		15.2			-3.3	9.5	28.8	22.0	7.3
	2	50.0	42.5			-33.0	-7.5		-4.0	12.3		15.8			-4.3	9.3	28.3	20.5	6.8
	3	51.2	40.5			-32.7			-7.0	12.3		15.0			-5.0	8.3	27.3	19.3	6.3
	4	51.5	38.5			-33.7			-3.8	11.3						7.5	26.0		5.3
	5		35.0			-34.3			-4.2	10.3						12.0			5.5
	6		32.3			-34.7			-4.8	9.3						15.8			6.5
	7		31.5			-35.8			-5.7	8.8						18.2			5.8
	8					-35.0			-6.5	12.0						17.8			5.5
	9					-33.5			-7.0	20.3						17.3			
	10					-34.2		4.5	-7.7	20.8						18.3			
	11					-34.8			-7.5	20.3						19.7			
	12					-35.2			-7.7	18.8						20.3			
	13					-35.7				18.7						20.3			
	14					-36.0			-9.0	19.5						22.0			
	15					-35.0				19.5						20.8			
	16					-35.3				18.2						19.8			
	17					-25.0				17.5						18.8			
	18					-22.0				17.7						18.5			
	19									16.5						18.0			
	20									17.8						17.3			
	21															17.5			
	22															19.3			
	23															19.3			
	24															20.3			
	25															21.0			
	26																		
	27																		
	28								-2.7										

Appendix 7. Mean daily water levels (cm) measured near the counting fence in Northeast Brook (Trepassey), 1984-2000.

Month	Day	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
April	1																	
	2																	
	3																	
	4																	
	5																	
	6																	
	7																	
	8																	
	9																	
	10																	
	11																	
	12																	
	13				32.0											39.0		
	14				32.0											73.0		
	15				32.0				29.0							60.0		29.0
	16				48.0				29.0							52.0		30.0
	17				36.0		34.0		29.0	28.0						39.0		30.0
	18				32.0	28.0	32.0	50.0	26.0	27.0						34.0		29.0
	19				31.0	30.0	38.0	35.0	26.0	27.0						44.0	29.0	27.0
	20				38.0	28.0	39.0	29.0	32.0	28.0			35.0	37.0		37.0	28.0	26.0
	21				33.0	38.0	38.0	26.0	39.0	28.0		46.0	31.0	32.0		39.0	27.0	26.0
	22			40.5	32.0	34.0	37.0	26.0	38.0	33.0	31.0	46.0	30.0	29.0	43.0	40.0	26.0	
	23			39.5	31.0	35.0	61.0	28.0	33.0	33.0	30.0	37.0	29.0	27.0	41.0	36.0	25.0	28.0
	24			38.5	29.0	34.0	46.0	74.0	51.0	28.0	47.0	34.0	28.0	26.0	38.0	31.0	25.0	27.0
	25			38.0	31.0	27.0	38.0	42.0	49.0	26.0	37.0	31.0	27.0	26.0	38.0	47.0	29.0	47.0
	26			37.5	32.0	27.0	36.0	31.0	40.0	24.0	30.0	30.0	62.0	27.0	37.0	40.0	28.0	38.0
	27			37.0	29.0	26.0	35.0	31.0	35.0	40.0	29.0	29.0	48.0	25.0	31.0	43.0	26.0	31.0
	28			36.5	26.0	24.0	34.0	30.0	33.0	44.0	27.0	36.0	35.0	24.0	30.0	42.0	39.0	29.0
	29			36.0	25.0	24.0	32.0	29.0	38.0	34.0	37.0	37.0	31.0	25.0	29.0	43.0	75.0	35.0
	30			35.0	26.0	23.0	31.0	27.0	28.0	30.0	50.0	32.0	29.0	28.0	29.0	34.0	49.0	32.0
May	1			34.5	55.0	33.0	31.0	25.0	26.0	47.0	36.0	29.0	27.0	27.0	41.0	31.0	38.0	57.0
	2			34.0	36.0	30.0	31.0	24.0	26.0	48.0	33.0	29.0	26.0	25.0	50.0	29.0	33.0	39.0
	3			34.0	31.0	27.0	30.0	24.0	25.0	40.0	59.0	30.0	26.0	24.0	46.0	28.0	30.0	35.0
	4			35.0	31.0	64.0	35.0	37.0	34.0	77.0	37.0	29.0	25.0	23.0	43.0	27.0	29.0	38.0
	5			34.5	30.0	41.0	33.0	30.0	35.0	46.0	34.0	27.0	24.0	24.0	38.0	39.0	27.0	32.0
	6			38.0	27.0	33.0	34.0	27.0	33.0	39.0	31.0	36.0	24.0	45.0	56.0	37.0	26.0	29.0
	7			54.0	26.0	30.0	29.0	49.0	30.0	35.0	29.0	47.0	23.0	32.0	44.0	32.0	25.0	27.0
	8			45.0	27.0	41.0	26.0	42.0	37.0	33.0	29.0	44.0	23.0	28.0	39.0	29.0	24.0	27.0
	9			39.5	51.0	36.0	26.0	33.0	46.0	31.0	27.0	34.0	23.0	27.0	36.0	29.0	24.0	30.0
	10			38.0	81.0	30.0	25.0	28.0	36.0	95.0	35.0	41.0	23.0	25.0	41.0	39.0	23.0	27.0
	11			35.0	106.0	79.0	24.0	26.0	31.0	50.0	28.0	36.0	23.0	24.0	69.0	34.0	23.0	26.0
	12			34.0	44.0	43.0	23.0	26.0	28.0	37.0	27.0	37.0	22.0	44.0	43.0	28.0	23.0	25.0
	13			34.0	36.0	33.0	23.0	33.0	27.0	36.0	25.0	32.0	22.0	44.0	35.0	26.0	23.0	77.0
	14			32.0	31.0	29.0	23.0	27.0	27.0	31.0	24.0	60.0	21.0	41.0	34.0	25.0	24.0	45.0
	15			32.0	29.0	27.0	23.0	25.0	26.0	32.0	24.0	38.0	21.0	32.0	47.0	25.0	24.0	35.0
	16		54.0	31.0	28.0	27.0	22.0	24.0	26.0	31.0	24.0	45.0	21.0	50.0	36.0	24.0	23.0	31.0
	17		52.5	30.0	28.0	25.0	21.0	24.0	25.0	29.0	25.0	39.0	21.0	36.0	36.0	23.0	22.0	30.0
	18		54.0	29.5	32.0	24.0	21.0	24.0	24.0	28.0	26.0	35.0	20.0	30.0	49.0	30.0	21.0	28.0
	19		87.0	29.5	28.0	24.0	20.0	23.0	25.0	35.0	28.0	32.0	20.0	28.0	68.0	27.0	21.0	27.0
	20			30.0	27.0	23.0	20.0	31.0	25.0	35.0	31.0	30.0	21.0	26.0	47.0	25.0	21.0	27.0
	21			40.0	25.0	23.0	20.0	34.0	25.0	31.0	40.0	30.0	20.0	25.0	37.0	24.0	20.0	30.0
	22			42.0	24.0	23.0	20.0	29.0	24.0	27.0	38.0	28.0	20.0	28.0	33.0	23.0	25.0	29.0
	23		54.0	37.0	25.0	22.0	20.0	26.0	24.0	28.0	47.0	28.0	19.0	27.0	31.0	22.0	31.0	27.0
	24		55.0	35.0	27.0	23.0	20.0	27.0	24.0	26.0	51.0	27.0	21.0	26.0	29.0	22.0	30.0	27.0
	25			39.0	23.0	23.0	19.0	25.0	26.0	24.0	46.0	25.0	20.0	25.0	32.0	22.0	40.0	37.0
	26			41.0	23.0	22.0	20.0	24.0	51.0	24.0	36.0	25.0	20.0	24.0	31.0	22.0	33.0	49.0
	27			35.5	22.0	22.0	20.0	23.0	34.0	23.2	32.0	40.0	19.0	23.0	79.0	22.0	59.0	39.0
	28			33.0	22.0	22.0	21.0	23.0	30.0	23.0	31.0	35.0	19.0	23.0	43.0	23.0	49.0	32.0
	29			33.0	22.0	22.0	31.0	23.0	27.0	28.0	29.0	34.0	19.0	24.0	35.0	23.0	51.0	29.0
	30			33.0	22.0	21.0	27.0	22.0	53.0	25.0	26.0	30.0	18.0	23.0	33.0	21.0	38.0	27.0
	31		52.0	32.0	22.0	20.0	23.0	37.0	38.0	24.0	28.0	27.0	22.0	31.0	30.0	22.0	32.0	27.0

Appendix 7 (cont'd)

Month	Day	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
June	1		49.5	31.5	21.0	19.0	22.0	34.0	32.0	23.0	28.0	27.0	23.0	36.0	44.0	21.0	30.0	26.0
	2			31.0	21.0	30.0	23.0	30.0	28.0	24.0	25.0	27.0	21.0	31.0	39.0	74.0	27.0	26.0
	3		47.0	31.0	20.0	27.0	49.0	28.0	28.0	24.0	30.0	45.0	20.0	27.0	33.0	44.0	35.0	25.0
	4		47.0	43.0	20.0	28.0	41.0	24.0	26.0	23.0	27.0	46.0	22.0	24.0	29.0	34.0	30.0	38.0
	5		49.5	37.0	20.0	24.0	31.0	23.0	25.0	22.0	25.0	38.0	22.0	27.0	27.0	34.0	34.0	31.0
	6		64.0	35.0	19.0	50.0	30.0	80.0	28.0	21.0	24.0	33.0	20.0	33.0	26.0	29.0	31.0	27.0
	7		55.0	36.0	18.0	39.0	34.0	47.0	32.0	22.0	23.0	30.0	19.0	28.0	25.0	28.0	26.0	26.0
	8			35.0	22.0	33.0	25.0	40.0	28.0	25.0	46.0	34.0	19.0	26.0	25.0	26.0	47.0	90.0
	9			77.0	23.0	27.0	25.0	63.0	26.0	24.0	39.0	37.0	30.0	26.0	24.0	24.0	34.0	46.0
	10		105.0	59.0	22.0	25.0	24.0	42.0	24.0	25.0	35.0	33.0	30.0	24.0	23.0	24.0	30.0	39.0
	11		69.0	46.0	21.0	60.0	23.0	35.0	23.0	24.0	29.0	29.0	25.0	23.0	24.0	24.0	26.0	34.0
	12		60.0	38.0	21.0	38.0	23.0	31.0	23.0	23.0	26.0	31.0	22.0	23.0	23.0	23.0	25.0	31.0
	13		54.0	36.5	21.0	31.0	23.0	30.0	23.0	22.0	24.0	25.0	29.0	22.0	22.0	23.0	24.0	28.0
	14		51.0	35.0	68.0	32.0	23.0	27.0	23.0	21.0	24.0	25.0	34.0	22.0	23.0	23.0	23.0	27.0
	15			34.0	37.0	30.0	21.0	26.0	23.0	21.0	23.0	24.0	30.0	22.0	80.0	21.0	22.0	26.0
	16			33.0	33.0	27.0	21.0	26.0	23.0	34.0	23.0	23.0	40.0	22.0	48.0	21.0	22.0	25.0
	17		46.0	31.5	29.0	25.0	20.0	33.0	22.0	46.0	22.0	23.0	32.0	22.0	33.0	20.0	22.0	25.0
	18		60.5		26.0	24.0	20.0	45.0	21.0	31.0	21.0	22.0	26.0	21.0	30.0	20.0	25.0	24.0
	19	38.0	62.0	52.0	24.0	59.0	20.0	35.0	21.0	28.0	21.0	22.0	24.0	20.0	39.0	21.0	30.0	23.0
	20	39.0	62.0	43.0	23.0	37.0	40.0	36.0	21.0	26.0	24.0	23.0	24.0	21.0	40.0	21.0	32.0	22.0
	21			38.0	23.0	30.0	53.0	40.0	21.0	26.0	23.0	21.0	23.0	20.0	42.0	21.0	27.0	22.0
	22			36.0	22.0	30.0	37.0	53.0	21.0	25.0	22.0	21.0	21.0	20.0	33.0	21.0	24.0	22.0
	23			37.0	21.0	27.0	29.0	51.0	21.0	23.0	26.0	22.0	21.0	20.0	30.0	20.0	23.0	22.0
	24	56.0	46.0	35.0	21.0	27.0	28.0	31.0	20.0	22.0	30.0	22.0	21.0	19.0	29.0	19.0	22.0	22.0
	25	59.0	44.5	34.0	20.0	30.0	26.0	35.0	20.0	22.0	32.0	21.0	21.0	19.0	28.0	19.0	22.0	21.0
	26		42.0	34.0	20.0	26.0	23.0	44.0	19.0	21.0	27.0	20.0	20.0	19.0	26.0	19.0	22.0	21.0
	27	54.0	41.5	23.0	19.0	28.0	40.0	34.0	19.0	25.0	24.0	21.0	20.0	55.0	25.0	19.0	21.0	21.0
	28	64.0	40.0	22.0	19.0	30.0	29.0	30.0	19.0	25.0	23.0	20.0	19.0	34.0	25.0	20.0	20.0	20.0
	29	57.0	41.0	64.0	24.0	28.0	27.0	29.0	19.0	23.0	22.0	20.0	19.0	28.0	24.0	24.0	21.0	20.0
	30	52.0	70.0	45.0	30.0	58.0	24.0	27.0	23.0	22.0	24.0	20.0	19.0	25.0	24.0	27.0	39.0	21.0
July	1	47.0	59.0	37.0	26.0	61.0	24.0	40.0	21.0	22.0	53.0	20.0	19.0	24.0	23.0	22.0	47.0	49.0
	2	45.0	51.0	32.0	24.0	45.0	23.0	34.0	21.0	24.0	36.0	20.0	19.0	29.0	23.0	10.5	32.0	37.0
	3	42.0	47.0	29.0	22.0	36.0	22.0	29.0	20.0	33.0	29.0	20.0	20.0	41.0	22.0	50.0	33.0	29.0
	4	41.0	43.0	30.0	21.0	35.0	22.0	28.0	19.0	28.0	25.0	21.0	23.0	36.0	22.0	35.0	25.0	26.0
	5	41.0	42.0	27.0	21.0	31.0	21.0	27.0	17.0	24.0	95.0	20.0	22.0	60.0	23.0	30.0	24.0	24.0
	6	40.0	40.5	26.0	22.0	33.0	20.0	26.0	16.0	22.0	48.0	20.0	20.0	43.0	29.0	44.0	30.0	31.0
	7	40.0	38.5	32.0	21.0	31.0	19.0	26.0	16.0	40.0		20.0	18.0	38.0	24.0	48.0	30.0	42.0
	8	40.0	42.0	31.0	20.0	37.0		26.0	17.0	77.0	30.0	19.0	18.0	31.0	22.0	35.0	30.0	44.0
	9	40.0	49.0	28.0	19.0	31.0	46.0	24.0	17.0	46.0	32.5	19.0	17.0	28.0	22.0	30.0	30.0	38.0
	10	40.0	54.5	26.0	19.0	28.0	40.0	25.0	21.0	35.0	29.0	19.0	16.0	27.0	21.0	75.0	26.0	32.0
	11	40.0	49.0	25.0	19.0	61.0	38.0	46.0	20.0	62.0	28.0	19.0	14.0	28.0	22.0	46.0	25.0	28.0
	12	39.0	48.0	24.0	19.0	38.0	36.0	34.0	19.0	40.0	25.0	19.0	17.0	26.0	22.0	35.0	25.0	73.0
	13	39.0	48.0	23.0	19.0	31.0	34.0	28.0	19.0	34.0	24.0	19.0	20.0	25.0	23.0	32.0	24.0	41.0
	14	38.0	47.0	23.0	19.0	43.0	31.0	26.0	19.0	32.0	24.0	19.0	13.0	23.0	21.0	29.0	23.0	35.0
	15	36.0	40.0	21.0	19.0	34.0	42.0	25.0	19.0	29.0	30.0	18.0	19.0	43.0	21.0	27.0	41.0	32.0
	16	36.0	50.0	22.0	19.0	30.0	39.0	23.0	24.0	28.0	29.0	18.0	17.0	32.0	23.0	26.0	30.0	28.0
	17	35.0	48.0	21.0	18.0	28.0	31.0	23.0	21.0	28.0	40.0	47.0	18.0	40.0	20.0	25.0	27.0	27.0
	18	54.0	93.0	20.0	18.0	27.0	30.0	26.0	19.0	25.0	31.0	30.0	17.0		20.0	24.0	24.0	26.0
	19	42.0	63.0	19.0	18.0	28.0	39.0	24.0	19.0	24.0	29.0	25.0	16.0	29.0	20.0	51.0	24.0	27.0
	20	41.0	56.0	27.0	18.0	28.0	33.0	23.0	19.0	37.0	28.0	23.0	12.0	30.0	20.0	35.0	23.0	31.0
	21	39.0	49.0	27.0	18.0	28.0	29.0	23.0	19.0	29.0	25.0	24.0	44.0	33.0	20.0	29.0	23.0	27.0
	22	36.0	43.0	25.0	17.0	26.0	26.0	23.0	19.0	41.0	24.0	23.0	34.0	35.0	19.0	26.0	22.0	26.0
	23	36.0	41.0	31.0	17.0	36.0	25.0	22.0	24.0	36.0	68.0	22.0	29.0	31.0	19.0	25.0	21.0	25.0
	24	34.0	46.0	25.0	17.0	30.0	24.0	22.0	21.0	29.0	40.0	22.0	30.0	28.0	19.0	24.0	21.0	24.0
	25	38.0	39.5	23.0	17.0	26.0	23.0	27.0	19.0	28.0	47.0	21.0	44.0	27.0	19.0	24.0	21.0	24.0
	26	37.0	36.5	22.0	22.0	53.0	22.0	24.0	18.0	26.0	34.0	90.0	31.0	25.0	19.0	34.0	21.0	22.0
	27	34.0	34.0	21.0	20.0	41.0	21.0	23.0	19.0	26.0	29.0	46.0	28.0	24.0	19.0	27.0	21.0	22.0
	28	33.0	38.0	21.0	19.0	33.0	20.0	21.0	19.0	26.0	27.0	37.0	27.0	24.0	18.0	25.0	22.0	21.0
	29	44.0	35.0	21.0	18.0	31.0	23.0	19.0	19.0	46.0	25.0	30.0	24.0	24.0	19.0	24.0	22.0	21.0
	30	62.0	37.0	78.0	17.0	28.0	60.0	19.0	18.0	36.0	24.0	27.0	23.0	23.0	20.0	22.0	21.0	21.0
	31	58.0	32.0	63.0	16.0	26.0	40.0	18.0	17.0	29.0	24.0	26.0	50.0	22.0	19.0	23.0	20.0	23.0

Appendix 7 (cont'd)

Month	Day	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
August	1	43.0	43.0	58.0	16.0	24.0	34.0	18.0	17.0	26.0	25.0	24.0	34.0	22.0	19.0	23.0	20.0	29.0
	2	40.0		41.0	18.0	25.0	26.0	20.0	19.0	28.0	27.0	23.0	30.0	22.0	18.0	30.0	20.0	26.0
	3	39.0	61.0	41.0	18.0	24.0	24.0	20.0	18.0	44.0	24.0	22.0	26.0	32.0	18.0	25.0	21.0	25.0
	4	38.0	48.0	32.0	18.0	23.0	23.0	20.0	18.0	33.0	23.0	24.0	24.0	32.0	19.0	23.0	20.0	22.0
	5	37.0	43.0	30.0	19.0	23.0	23.0	19.0	17.0	28.0	23.0	34.0	23.0	26.0	19.0	22.0	20.0	22.0
	6	37.0	37.5	37.0	19.0	23.0	23.0	19.0	18.0	38.0	23.0	28.0	22.0	24.0	23.0	21.0	20.0	22.0
	7	36.0	37.0	29.0	19.0	22.0	22.0	60.0	18.0	32.0	22.0	26.0	22.0	23.0	58.0	20.0	20.0	22.0
	8	35.0	37.0	27.0	18.0	22.0	23.0	37.0	18.0	28.0	24.0	26.0	21.0	22.0	34.0	20.0	20.0	22.0
	9	35.0	41.0	25.0	17.0	22.0	23.0	30.0	17.0	26.0	44.0	36.0	21.0	21.0	25.0	20.0	19.0	44.0
	10	34.0	38.0	31.0	17.0	22.0	23.0	27.0	15.0	24.0	31.0	78.0	21.0	21.0	26.0	20.0	25.0	39.0
	11	34.0	36.0	29.0	17.0	22.0	21.0	23.0	14.0	24.0	26.0	45.0	20.0	23.0	25.0	20.0	22.0	41.0
	12	34.0	33.0	26.0	17.0	21.0	21.0	23.0	15.0	23.0	25.0	34.0	20.0	22.0	23.0	19.0	20.0	38.0
	13	38.0	33.0	24.0	16.0	21.0	20.0	22.0	30.0	24.0	24.0	30.0	22.0	21.0	21.0	24.0	19.0	31.0
	14	44.0	33.0	23.0	16.0	21.0	20.0	34.0	22.0	23.0	23.0	26.0	23.0	21.0	20.0	23.0	19.0	27.0
	15	38.0	30.5	23.5	16.0	32.0	21.0	51.0	19.0	22.0	22.0	28.0	21.0	36.0	21.0	21.0	19.0	27.0
	16	36.0	30.0	23.0	16.0	25.0	20.0	44.0	19.0	21.0	23.0	27.0	21.0	26.0	20.0	20.0	19.0	25.0
	17	33.0	29.5	22.0	16.0	23.0	22.0	36.0	18.0	21.0	22.0	24.0	21.0	23.0	20.0	20.0	20.0	25.0
	18	34.0	29.5	21.0	16.0	53.0	22.0	29.0	18.0	22.0	21.0	23.0	21.0	28.0	23.0		19.0	25.0
	19	60.0	29.0	21.5	17.0	44.0	20.0	27.0	17.0	22.0	21.0	24.0	20.0	23.0	22.0	22.0	19.0	25.0
	20	70.0	28.5	21.0	17.0	33.0	20.0	30.0	17.0	26.0	21.0	24.0	19.0	22.0	20.0	25.0	19.0	25.0
	21	55.0	30.5	25.0	16.0	27.0	19.0	27.0	19.0	24.0	21.0	23.0	19.0	21.0	20.0	23.0	18.0	38.0
	22	72.0	30.0	22.0	17.0	26.0	46.0	24.0	18.0	22.0	23.0	22.0	24.0	21.0	19.0	21.0	19.0	31.0
	23	58.0	50.0	19.0	17.0	24.0	34.0	24.0	20.0	22.0	28.0	24.0	33.0	21.0	18.0	20.0	20.0	28.0
	24	43.0	53.0	21.0	28.0	24.0	28.0	23.0	21.0	21.0	25.0	29.0	25.0	21.0	25.0	19.0	20.0	
	25	48.0	39.5	20.0	28.0	23.0	42.0	22.0	19.0	20.0	22.0	25.0	25.0	22.0	24.0	29.0	19.0	23.0
	26		36.0	21.0	20.0	22.0	36.0	22.0	18.0	20.0	23.0	24.0	44.0	23.0	21.0	85.0	17.0	23.0
	27	56.0	31.0	20.0	18.0	22.0	32.0	22.0	17.0	20.0	30.0	23.0	34.0	21.0	21.0	42.0	19.0	23.0
	28	50.0	31.0	20.0	17.0	22.0	27.0	21.0	17.0	20.0	25.0	22.0	28.0	20.0	20.0	33.0	18.0	23.0
	29	47.0	31.0	30.0	17.0	21.0	25.0	25.0	16.0	25.0	23.0	22.0	25.0	19.0	20.0	29.0	22.0	21.0
	30	44.0	36.0	35.0	17.0	21.0	24.0	28.0	15.0	24.0	21.0	24.0	24.0	51.0	31.0	28.0	23.0	22.0
	31	43.0	36.0	28.0	16.0	21.0	24.0	26.0	15.0	25.0	21.0	22.0		33.0	52.0	27.0	21.0	21.0
September	1	42.0	36.0	24.5	16.0	22.0	40.0	25.0	15.0					26.0	35.0	35.0	20.0	21.0
	2	43.0	65.0	23.0	16.0	21.0	31.0	23.0	16.0					24.0	29.0		19.0	21.0
	3	44.0	46.0	22.0	18.0	20.0	33.0	23.0	16.0					23.0	25.0		18.0	20.0
	4	42.0	39.0	21.0	17.0	20.0	30.0	21.0	14.0					23.0	25.0		18.0	20.0
	5	40.0	36.0	21.0	17.0	19.0	25.0	21.0	14.0					22.0	24.0		18.0	23.0
	6	40.0	34.5	20.5	17.0	45.0	23.0		15.0						47.0		18.0	25.0
	7	54.0	41.5	20.0	16.0	33.0	23.0		14.0						33.0		18.0	22.0
	8		37.0	20.0	16.0	27.0	23.0		18.0						29.0		18.0	21.0
	9	59.0	46.0		16.0	27.0	23.0		32.0						60.0		18.0	21.0
	10	48.0	43.5		16.0	23.0	22.0		25.0								19.0	21.0
	11		39.5		16.0	27.0	21.0		23.0								20.0	20.0
	12				16.0	35.0			24.0								19.0	20.0
	13		45.5		15.0	28.0			22.0								19.0	19.0
	14				15.0				21.0								19.0	19.0
	15				35.0				20.0								18.0	17.0
	16				37.0				19.0								18.0	19.0
	17				26.0				18.0								31.0	20.0
	18				23.0				32.0								31.0	34.0
	19				20.0												35.0	26.0
	20				20.0												27.0	
	21				19.0												24.0	
	22				18.0												22.0	
	23				17.0												24.0	
	24				18.0												32.0	
	25				17.0												26.0	
	26				19.0												28.0	
	27				19.0												31.0	
	28				19.0													
	29				18.0													
	30				18.0													

Appendix 7 (cont'd)

Month	Day	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
October	1				18.0													
	2				34.0													
	3				28.0													
	4				46.0													
	5				34.0													
	6				34.0													
	7				29.0													
	8				27.0													
	9				39.0													
	10				42.0													
	11				32.0													
	12				28.0													
	13				26.0													
	14				25.0													

Appendix 8. Mean daily water levels (cm) measured near the fishway in Northeast River (Placentia), 1983-2000.

Month	Day	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
June	1																	24.5	
	2																	23.7	
	3																	21.5	
	4																	17.2	22.0
	5																	23.8	21.3
	6																	20.7	21.2
	7																	20.0	33.0
	8																	19.7	30.0
	9															18.0			30.7
	10									24.0						18.0		18.0	28.7
	11									24.0						17.0		17.0	26.7
	12									24.7						16.8	27.3	17.0	25.0
	13									26.0				32.5		16.8	26.5	17.3	25.0
	14					19.0				24.0		16.0		41.3		30.0	25.0	17.0	25.0
	15					18.8	25.8	15.7		23.0		16.0	23.0	36.0		28.7	23.5	28.8	24.2
	16					18.5	25.3	14.7		22.2		15.8	22.0	32.0		26.8	20.0	32.3	24.5
	17			23.0				13.8	33.5	19.3	16.0	14.8	20.8	29.3		18.5	16.5	31.2	23.0
	18			25.0	28.0	18.0		19.3	33.0	19.0	16.0	14.4	20.5	29.3		23.7	15.2	28.5	21.0
	19			24.0	26.7	17.0													
	20	31.0	22.0	25.0	24.7	17.0	30.7	21.7	32.7	19.7	15.0	16.2	20.0	29.7	22.0	39.3	27.0	26.7	21.0
	21	31.0	25.5	23.8	23.0	17.0	29.0	21.3		18.7	16.0	15.3	19.0	28.5	22.0	30.3	25.0	26.0	21.0
	22	29.3	27.0	23.5	22.8	17.0	26.7	19.7	26.0	17.0	14.0	15.3	18.8	26.7	19.2	28.0	24.7	26.0	20.0
	23	28.5	25.0	23.0	22.8	17.0	26.7	18.7	46.0	16.0	14.5	20.2	18.8	25.2	19.0	25.5	23.8	25.5	19.5
	24	27.7		22.5	19.2	15.5	30.3	18.0	44.0	16.0	14.0	25.3	18.0	24.0	19.0	25.0	22.3	25.0	19.0
	25	33.6	22.5	22.0	22.0	15.5	27.0	17.3	45.7	16.0	14.0	26.8	17.0	22.5	18.2	26.9	18.7	24.8	18.5
	26		21.8	21.2	21.3	16.0	25.0	18.7	43.7	15.0	13.0	25.2	16.7	22.3	18.3	24.4	17.0	24.3	17.5
	27	27.2	22.0	21.0	20.8	16.0	31.7	19.7	38.3	15.0	13.0	25.0	16.5	21.7	21.2	21.8	19.0	26.7	17.0
	28	27.8	22.0	20.8	20.0	16.0	36.7	18.7	33.0	14.0	13.0	23.8	16.0	20.0	20.7	21.8	19.0	28.2	16.0
	29	26.4	21.3	20.3	30.7	16.0	40.0	17.7	32.0	14.0	13.0	24.5	15.7	20.0	20.3	21.3	19.0	26.8	16.0
	30	24.4		24.6	23.8	15.5		17.0	29.0	16.7	13.0	30.5	16.0	20.0	19.5	19.5	18.0	26.0	16.6
July	1	24.2		24.2	22.2	15.5		16.3	28.0	16.0	14.0	38.0	17.0	19.0	21.2	20.0	16.5	25.3	22.5
	2		21.0	23.0	21.0	15.0		17.0	26.7	16.0	15.3	31.5	16.8	18.5	35.3	18.8	23.2	23.7	21.5
	3		20.3	22.5	22.4	15.0		17.0	25.2	16.0	17.7	28.5	16.8	22.6	54.0	18.1	24.0	23.5	21.5
	4	25.1	20.0	22.0	21.9	14.0	43.0	15.8	24.0	15.3	17.0	26.7	18.8	24.4	35.3	15.2	24.0	25.3	21.0
	5	23.4	20.0	21.9	20.6	15.0	39.3	14.7	24.0	14.7	16.0	34.5	18.0	23.2	30.7	20.3	23.3	24.3	20.0
	6	22.7	20.0	20.8	21.0	17.0	36.0	14.5	19.7	14.0	18.8	32.7	18.0	20.5	35.1	19.7	28.8	23.0	18.0
	7	23.1	19.5	20.5	20.4	16.7	36.7	14.7	18.0	13.7	22.0	29.2	17.5	18.9	30.8	18.6	27.0	22.7	18.4
	8	30.0	19.3	22.8	18.5	15.7	27.7	20.3	19.0	13.0	28.0	27.2	17.5	18.5	29.3	17.1	25.6	22.3	28.5
	9		19.0	26.0	18.4	15.0	34.3	20.7	19.0	13.3	26.7	26.8	17.6	17.5	27.0	17.0	27.7	23.0	28.5
	10		18.7	25.5	18.5	14.8	30.7	19.0	18.0	14.0	27.3	25.7	17.0	16.8	26.7	16.5	35.0	23.0	27.0
	11	27.5	19.5	24.5	18.0	14.0	28.3	20.3	18.7	14.0	31.0	25.2	15.9	17.0	26.7	16.8	33.0	21.8	24.5
	12	27.1	19.0	25.5	18.0	14.0	27.0	22.3	18.0	13.7	29.0	24.0	16.3	17.9	25.0	17.0	31.0	21.7	23.0
	13	27.1	18.5	25.0	17.6	14.0	24.0	20.7	17.3	13.0	27.0	22.2	15.7	16.7	23.2	16.5	28.7	27.2	22.0
	14	26.7	18.1	24.0	18.0	14.0	22.7	19.0	17.0	13.0	26.0	21.3	15.5	16.1	33.9	16.0	26.3	25.5	23.5
	15	26.8	18.1	23.3	18.3	13.5	20.0	21.3	17.0	13.5	24.7	20.7	15.0	15.4	41.0	18.5	26.0	24.7	24.0
	16		18.0	23.7	18.4	13.5	20.0	19.3	16.0	14.7	24.0	24.2	15.7	15.8	33.7	19.3	26.7	24.8	24.0
	17		18.5	24.0	18.0	13.5	20.0	19.7	14.7	14.7	22.3	25.3	23.6	15.5	35.0	17.2	26.0	24.2	19.5
	18	29.9	19.0	30.5	17.4	13.5	20.0	21.3	15.7	14.0	20.7	23.5	22.4	14.2	31.3	16.4	26.0	21.5	19.0
	19	28.3	18.5	39.0	17.0	13.5	19.7	19.0	17.0	14.0	21.0	24.5	21.2	14.0	29.2	17.3	34.3	20.3	19.0
	20	27.5	18.5	43.5	21.3	13.5	22.0	18.0	15.7	13.3	26.0	23.0	20.2	34.7	29.0	16.8	30.5	19.3	19.5
	21	27.1	18.0	42.5	22.6	13.0	21.7	17.7	16.0	13.0	22.7	20.8	19.8	30.0	28.2	16.0	28.3	18.0	18.0
	22	25.7	18.0	39.3	20.8	13.0	20.0	18.0	16.0	20.7	20.7	21.3	19.4	29.0	27.0	15.5	28.0	18.0	20.0
	23		17.8	34.3	20.0	13.0	19.7	17.0	15.0	18.0	18.7	28.2	19.3	27.5	26.5	15.6	27.3	17.2	20.0
	24		18.3	31.1	19.8	12.0	18.7	16.7	15.0	17.7	17.7	26.2	19.8	26.2	25.2	16.0	29.0	16.0	18.0
	25	29.6	19.0	28.8	18.8	12.7	18.0	15.3	15.7	17.0	17.7	27.2	20.2	28.5	23.5	15.5	29.7	16.2	23.5
	26	31.1	18.5	27.2	18.0	13.0	18.8	15.0	14.0	16.0	15.7	24.5	22.4	27.0	23.0	14.5	30.0	26.8	20.0
	27	31.6	18.0	27.0	17.5	15.0	20.7	14.0	14.0	16.0	15.0	23.0	22.1	26.0	22.5	14.8	28.5	26.0	18.5
	28	30.5	18.0	25.8	19.2	16.3	18.7	14.0	13.7	17.0	15.0	20.5	21.7	26.2	23.2	14.0	26.5	24.8	17.5
	29	29.9	18.5	24.7	18.5	15.0	19.0	15.3	13.5	16.8	18.7	19.2	21.5	24.5	23.0	15.5	25.7	23.7	19.0
	30		18.0	24.7	20.7	15.0	19.0	17.0	13.0	15.8	18.0	19.0	21.0	23.2	22.0	15.8	24.7	23.2	19.0
	31		17.8	23.8	21.0	15.0	18.7	15.0	11.3	15.0	16.8	19.8	21.0	23.5	21.3	14.6	24.5	23.5	18.5

Appendix 8 (cont'd)

Month	Day	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
August	1	29.5	17.5	23.4	19.7	14.0	19.0	15.0	10.5	15.0	16.0	28.0	20.5	22.8	20.2	14.0	25.2	24.7	21.0
	2	28.5	17.5	25.9	20.7	14.0	19.0	14.0	11.0	16.0	16.3	29.8	20.2	21.4	20.0	14.0	24.5	23.2	18.0
	3	31.8	17.3	26.5	19.8	16.0	19.0	14.0	10.7	16.0	15.8	27.4	19.4	20.3	20.3	13.5	23.7	20.0	17.0
	4	30.7	17.5	24.5	19.0	16.0	18.0	13.7	11.0	15.7	15.2	24.2	24.8	19.8	19.7	13.5	23.0	19.3	16.5
	5	30.1	17.0	23.3	19.9	15.3	17.7	13.0	10.0	15.0	14.0	22.0	25.7	18.3	19.0	13.2	22.0	19.0	18.0
	6		17.0	22.8	19.3	14.0	17.0	13.0	10.0	15.3	16.0	22.7	23.5	17.6	17.2	15.0	20.8	18.7	19.0
	7		16.5	22.0	18.3	14.0	16.0	19.0	12.0	15.0	14.7	21.8	22.8	16.5	16.5	15.8	19.8	19.3	16.0
	8	28.4	16.5	21.5	18.0	13.0	15.8	23.0	11.7	14.3	13.7	24.0	22.5	16.0	16.5	15.3	19.5	20.0	17.0
	9		16.0	21.0	17.5	12.8	15.7	28.3	11.0	14.0	13.0	24.5	24.9	15.1	16.0	14.5	19.0	17.2	19.0
	10	28.1	16.0	20.7	19.3	12.5	15.0	30.0	11.0	14.0	13.0	23.0	28.0	14.0	16.0	15.5	18.2	15.5	18.5
	11	29.9	16.0	20.8	18.5	12.5	15.0	26.0	10.5	13.5	13.2	21.2	26.7	14.4	26.0	15.2	17.2	17.0	18.5
	12	28.4	17.3	21.0	19.1	12.5	14.3	21.7	10.0	14.2	14.0	18.7	25.3	14.0	24.7	14.2	16.8	20.0	19.0
	13		22.1	21.0	18.2	12.0	14.0	21.0	12.0	15.0	14.0	17.5	24.3	14.1	23.3	13.8	20.3	19.7	18.5
	14		21.5	20.3	17.3	12.0	16.7	22.0	12.0	14.7	14.0	17.0	23.6	17.2	22.7	13.5	20.8	16.2	18.0
	15	29.6	19.2	19.8	17.0	12.0	19.0	21.7	23.0	13.8	13.5	19.2	22.0	16.0	27.2	13.8	17.7	16.5	17.5
	16	29.4	18.8	19.5	16.8	12.0	18.7	22.0	20.0	13.7	13.0	18.0	22.5	15.3	23.8	14.7	17.3	16.0	17.0
	17	36.5	18.0	19.5	16.4	12.0	18.0	22.0	18.8	14.0	13.0	16.5	21.5	15.8	22.5	14.0	16.3	15.5	17.0
	18	34.1	19.8	19.0	16.0	12.0	20.7	19.7	18.0	14.0	13.0	16.0	20.5	14.8	23.3	13.8	16.0	17.0	42.0
	19	32.3	29.4	18.8	15.8	12.0	19.7	19.0	18.0	14.0	14.7	15.8	19.8	13.2	22.7	13.5	30.3	16.5	36.0
	20		28.5	18.5	15.7	12.0	17.7	18.0	17.2	19.3	15.3	15.3	19.5	13.0	21.5	13.5	30.3	15.8	30.0
	21		25.7	19.0	15.8	12.0	16.7	18.3	15.0	22.0	14.7	15.0	19.0	12.0	19.5	13.7	24.8	16.0	33.0
	22	37.6	23.3	18.5	15.3	11.7	19.3	19.7	14.0	20.0	14.7	15.7	19.3	14.2	18.5	12.0	24.0	15.7	29.5
	23	36.1	23.0	19.2	15.0	11.2	19.7	19.0	14.0	19.7	16.0	15.3	22.0	14.0	16.8	12.0	23.8	15.0	27.0
	24	34.7	22.5	20.0	14.8	20.0	18.0	20.7	14.0	18.0	15.0	14.8	21.7	14.0	16.5	12.8	22.5	15.0	24.0
	25		39.2	19.1	14.8	18.7	17.0	26.7	13.5	18.0	14.3	14.0	20.8	16.8	28.0	12.0	22.8	14.7	23.5
	26	33.1	33.3	18.5	14.8	15.3	17.0	26.3	13.0	18.0	14.0	14.2	19.8	20.0	24.5	12.0	34.3	14.2	34.0
	27		29.3	18.5	14.0	14.7	17.0	26.0	11.7	17.5	13.0	14.5	18.8	20.0	22.5	12.0	33.3	14.0	31.0
	28		27.8	18.0	14.5	14.0	16.7	26.0	10.2	17.0	13.0	14.0	18.3	19.5	19.7	12.0	29.0	13.8	28.5
	29	33.7	26.7	19.0	16.0	13.3	16.0	25.3	17.5	17.0		13.5	18.3	18.5	27.8	12.0	25.8	13.0	30.0
	30	32.8	26.0	21.8		13.3	16.0	24.7	17.0	16.5		13.5	17.8	16.8	37.7	22.3	26.5	12.2	32.0
	31	31.8	25.0	21.7		13.0	20.0	25.0	22.0	16.0		13.2	16.8	22.3		28.0	23.7	11.2	28.0
September	1	31.6		23.8		12.8	20.0	27.0		16.3		13.0	16.3	27.0		26.7	21.7	10.0	26.0
	2	41.0		25.0		14.2	19.0			16.5		12.8	16.0		24.5	24.8	20.3		27.0
	3			22.8		18.0				16.0		12.5			21.7	22.8	20.0		28.0
	4			21.8		17.0				15.7					21.0	23.8	20.0		26.0
	5			21.0		18.0				15.0					20.8	38.0			29.0
	6			21.5		18.0				15.0					21.0	34.0			26.0
	7					18.0				15.0						29.0			24.0
	8					18.0				20.0						28.0			23.0
	9					18.7				23.3						29.3			
	10					17.0				20.2						38.0			
	11					16.7				20.0						31.5			
	12					14.0				18.0						29.5			
	13					13.0				20.0						27.8			
	14					13.0				19.7						26.0			
	15					15.0				19.0						25.0			
	16					17.5				18.7						24.5			
	17					18.0				18.0						22.8			
	18					28.5				18.0						21.8			
	19									18.0						20.8			
	20															20.0			
	21															19.8			
	22															18.8			
	23															16.8			
	24															16.8			
	25															15.8			
	26															15.0			
	27																		
	28																		